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THE PETROLEUM AGE.

A MONTHLY MAGAZINE DEVOTED TO THE INTERESTS OF

THE PETROLEUM TRADE.

VOL. V.

FEBRUARY, 1886, TO JANUARY, 1887.

BRADFORD, PA.:

McMULLEN, SNELL & ARMOR, PUBLISHERS.

1887.

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THE PETROLEUM AGE.

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THE NATURAL GAS CRAZE.

BY JOHN F. CARLL.

ONLY about a quarter of a century has elapsed since the first flowing oil and gas wells on Oil Creek introduced petroleum to the world in sufficient quantities to make it commercially valuable as the basis of a new illuminant—an insignificant time when counted by years, but an important and wonderful period if measured by the achievements of those engaged in producing, transporting and refining petroleum, and by the practical and scientific results which have been given to the world.

The history of early petroleum developments is familiar to all. How Oil Creek suddenly became a Mecca to which fortune-seekers flocked from all parts of the Union; how some of the pilgrims, captivated by delusive promises of immediate wealth, concluded to remain a few months to secure a competency—which, alas, after years of anxious toiling, came only to a few of them; how others, equally infected, returned home to develop lands in their own neighborhoods wherever gas vents or oil seeps could be found; how oil companies almost innumerable were organized in city, town and country with capitals aggregating many hundreds of millions of dollars; and how all this infatuation ended in almost universal disappointment and bankruptcy—not because there was no reality in the business of petroleum mining, but on account of the extravagant and injudicious manner in which these early developments were conducted.

"History repeats itself." The fact having been established that fuel-gas can be profitably piped and utilized for manufacturing and domestic purposes, a craze for natural gas developments quickly springs up and spreads throughout the land. Now Pittsburgh is the center of attraction, and delegations from all parts of the world are visiting the city to inspect the methods of handling the new fuel and study the effects of its practical application to the various purposes to which it is adapted. All who come are captivated by what they see and learn. It seems a small matter to drill a hole in the ground and lay a few miles of pipe. Why not every town have its own gas well? The infection quickly spreads; natural gas companies are easily organized, and now experimental wells are drilling in nearly every State of the Union where there is the slightest possibility of obtaining the coveted treasure.

Is it not probable that this gas craze will end as disastrously to many of the company shareholders as the petroleum fever did? Are not gas wells surrounded by the same elements of uncertainty as oil wells? Will they not exhaust as oil wells and old-time gas wells have? Will not speculative competition and injudicious drilling deplete the gas reservoirs more rapidly than prudence would dictate and eventually occasion loss even to companies which endeavor to manage their own affairs wisely?

Many are investing in these enterprises in the belief that natural gas is inexhaustible—that with the plant paid for and the consumers secured, nothing remains to be done but to collect revenues, pay a few salaried employes and declare dividends *ad infinitum*. But do the experiences of twenty-five years in petroleum mining furnish any grounds for such a belief?

About 50,000 wells have been drilled for oil since 1859. Many of them proved to be large natural gas wells, similar in all respects to those which are now being utilized, and it is an unquestionable fact that the same geological conditions are common to both the old and the new. Can any one well be found among this 50,000 to sustain the theory that gas is inexhaustible? Do we not positively know by experience repeated over and over again that the longevity of a pool of oil or gas depends entirely upon the rapidity with which its cover is perforated by drill holes? And do we not know, also, that an oil pool may be profitably productive long after the gas has ceased to have any practical value for piping purposes?

In the Triumph district, with 120 feet of sandrock reservoir—the thickest and most permeable sand bed ever found in the oil regions, and probably the richest in oil or gas, in proportion to its acreage—fifty wells or more continued to produce oil profitably, several years after the gas might be said to be almost absolutely exhausted, for gas pumps were in use on all the wells and the gas became so rarefied in the rock that a vacuum gauge showed a down pressure of about twelve pounds to the square inch. It is evident that this could not have happened if the gas was inexhaustible, or if it was generating with any considerable degree of rapidity.

The history of the leading characteristics of one pool must be the history of all, for all are similarly conditioned, whether stored with oil and gas or with water and gas. They contain certain quantities of fluids—the accumulations of ages—and every day's draft upon them lessens the quantity remaining as surely as every ton of coal removed from a colliery leaves so much less to be mined. Some of the deposits are very large, some are comparatively small, but even the largest can be quickly depleted by unrestricted drilling; and when a gas pool is so relieved that its pressure is but little in excess of atmospheric pressure it becomes valueless except for local purposes, for gas under such tension, although it may still have considerable volume, cannot be profitably conveyed through long pipe lines; and admitting that oil and gas are still being generated in the rocks, the history of 50,000 wells already drilled shows the folly of hoping for any practical assistance from that source.

The fallacious notion that natural gas deposits will be more enduring than petroleum deposits have been, needs correction. No good reasons can be assigned why the average life of a gas pool should be greater than that of an oil pool. Indeed, if the probabilities are considered, the chances for longevity appear to be in favor of the latter. Oil, when produced in excess of daily demands, can be tanked for future use; accumulating stocks de-

press prices: low prices retard developments, and thus prolong the life of a pool—and, as before cited, *oil* can be pumped with profit after *gas* has been practically exhausted.

Gas cannot be tanked like oil, and in most cases no preparations are made for controlling and saving it in the wells; all daily surplusage is wasted; there can be no accumulation of stocks above ground to affect market values, hence prices are more likely to advance than to decline, and all increasing demands must be met by new wells.

The location of a gas pool is evidently a very important factor in estimating its probable life. If situated where only a limited market is to be supplied it may be lasting; but, if near a large city which cannot be surfeited, it must soon be exhausted by the excessive drilling of speculators and competing pipe lines, and it would not be at all surprising if some of the gas pools now starting out with the greatest promises should have brilliant but short-lived careers, similar to Cherry Grove and Thorn Creek.

OIL REGION CHRONOLOGY.

For January, 1886.

Jan. 1. Holiday; no market. Age Oil Report shows 355 wells completed in December, 45 of which are dry; new production, 3886 barrels; new rigs, 251; old rigs, 108; wells drilling, 317; total field operations, 676; decrease from November, 101. Gantz well, Washington, tubed and pumps 25 barrels first 12 hours. Gordon No. 2 making from 30 to 40 barrels a day from the "fifty foot" rock.

Jan. 2. Market advances over three cents on the strength that Murphy well, southwest of Kane, is dry. Opening at 88⅝, in two minutes jumped to 89¾, when a slight check was experienced, and in the next fifteen minutes rushed up to 91⅞. This was the highest mark of the day. Closed firm at 91. Carrying rates—Bradford, 50c.; New York, 65c.; Oil City, 45c.; Pittsburgh, 40c. Murphy well on 3775, Kane field, down and dry. Associated Producers', on 3782, also a failure. Bradford Oil Exchange election. C. L. Wheeler is elected President for ninth time; C. R. Huntley, Vice President; Winfield Scott, Treasurer; E. A. Flanigan, Secretary. Pittsburgh Petroleum Exchange elects J. E. Shaw, President; N. W. Stevenson, First Vice President; D. B. Stewart, Second Vice President; J. R. Johnson, Treasurer; J. K. Barbour, Secretary. Taylor No. 2, at Phillipsburg, flowing 35 barrels a day. Oil City Oil Exchange election: H. L. Foster, President; W. W. Nicholas, Vice President; R. T. Leach, Secretary; W. H. Choate, Treasurer.

Jan. 3. Sunday. Fisher Oil Company strike a large gasser in the fourth sand on the Smith farm, near Herman Station, Butler county.

Jan. 4. Market opened at 91⅝ and dropped rapidly to 90 the first hour, strengthened to 91⅛ towards noon, but fell off again and closed at 90⅛ bid. Tennent, Howe & Co.'s well on lot 424, Kane field, showing for good gasser, but no oil. Vandergrift well, on Weirich farm, Washington, showing oil in the fifty foot, below Gantz sand. Smith farm well (Dyer or Belmont Oil Co.) starts flowing. Gantz well makes 35 barrels in 38 hours. Gordon No. 2 doing 30 barrels a day. Pickett & Co. well on 3729, Corydon, above Kinzua Village, down and dry.

Jan. 5. Market weak under reports from Dyer, Willets & Co. well on Smith farm, Washington county. Opened at 90⅜, sold down to 90, rose to 91, sagged off to 89⅞, and closed with sales at 90c. Belmont Oil Company's well on Smith farm, Washington, showing large. Reported 200 barrels for first 15 hours. Gantz pumps 45 barrels in 24 hours. Armor, Clark & Co. on 4791, Balltown, drilled through sand and is dry. Col. A. J. Greenfield appointed postmaster at Oil City. Election of Titusville Oil Exchange: President, H. Y. Pickering; Vice President, Jesse Smith; Treasurer, B. E. Kraffert; Secretary, C. E. Martin. While attempting to shut in the Smithman gas well on McKeever farm, near Sawtown, the casing parted and the gas rushed out with terrific force. Mr. McKeever was thrown against some lumber and seriously injured, Mr. Kerstetter thrown down and badly bruised and Mr. Stouffler was hurled against the derrick and his leg broken.

Jan. 6. Market lower from effects of Washington well. Opened at 89⅜ and sold down to 86⅞ the first hour. Recovered to 88⅜, broke to 87⅛ and at close rallied to 87¾. Carrying rates—Bradford, flat to 25c.; New York, 50 to 60c.; Oil City, 45c.; Pittsburgh, 45c. Construction of pipe line in the Washington field begun. Smith farm well fills 600 barrel tank first 48 hours. Much trouble experienced along Allegheny river from high water. Residents of the flats at Olean compelled to move for higher ground. Buffalo division of B., N. Y. & P. abandoned for several hours. Two miles of K. & E. R. R. track near Eldred submerged and trains cease running. Allegany Central road runs train only as far as White House. Tank No. 13 of the Standard Oil Works at Cleveland destroyed by fire. Loss, $20,000.

Jan. 7. Market opened firm at 88c., with few sales, advanced to 89, fell off to 88½, braced up to 89¼, dropped back to 88⅝, and in last hour went to 90c. Closed strong with 89⅞ bid. Oil reported to have been found in a salt well at Livonia Station on the Erie R. R., thirty miles south of Rochester. John Goetz receives $2750 from the Butler Gas Company for damages in the accident of one year ago, which killed his son and destroyed his house.

Jan. 8. Market opened at 90c. and dropped to 87⅜ under bearish reports from Washington well. Rallied a little in the afternoon and closed at 87⅞ bid. Vandergritt well on Weirich farm, Washington, put 75 barrels in the tank in 27 hours. Smith farm well fills a 250 barrel tank in 23½ hours, besides flowing five hours in the creek through one lead pipe. Gordon No. 2 doing 30 barrels. Gordon No. 1, 57 barrels. Tubing again drawn at the Gantz. Drillers delayed at Gabby by poor boiler. Heavy fall of snow at Washington. Craig & Cappeau well, Kane, makes 85 barrels in 24 hours. Wells at Kinzua Village reported as follows: Anchor No. 1, 140; No. 5, 160; Phillips No. 4, 150; B. F. Brown, 110 barrels. Lee's grocery and L. Williams' residence burned at Fern City, Cogley field. Loss, $2000; no insurance.

Jan. 9. Market stubborn in face of heavy selling. Opened at 87⅝, went up to 88 and down to 87¼. Toward noon went to 88⅝, receded to 87⅜, rallied to 88⅛, broke to 87½ and closed steady at 87¾. Craig & Cappeau No. 1 well at Kane doing 84 barrels. Portion of rig at McClane farm, Washington, destroyed by fire from boiler. Rumor started that oil had been struck. Heavy fall of snow and severe weather in Washington field. Twelve inches of snow falls at Oil City.

Jan. 10. Sunday. The pump is started anew at the Gantz well, Washington, and it puts out oil at the rate of 6 barrels an hour. Falls off materially after 8 or 10 hours work.

Jan. 11. Market still pervaded by bearish sentiment

Opened at 87⅞ and closed at 87⅜. Belmont Oil Company's well, Smith farm, Washington, made 682 barrels in 40 hours, an average of 17 barrels an hour. Judge Wilson, of Clarion, appoints Miss Mary Jane Hanrahan as tipstave in his court, to serve one year. Well of Wolf & Kugler at Scotch Hill, Clarion county, 2100 feet deep and pronounced a failure. Pittsburgh Petroleum Exchange decides to change the name and amend the charter of the Exchange to Pittsburgh Petroleum, Stock and Metal Exchange. Frank H. Taylor retires from the Oil City *Derrick*.

Jan. 12. Market vibrated between 87 and 87⅝ and closed at 87¼. Carrying rates—Bradford, 25c.; Oil City, 35c.; New York, 40 to 45c.; Pittsburgh, 50c. Election of officers at the Producers' Exchange, Bradford. Smith farm well, Washington, reported at 400 barrels a day. Gantz well pumped 56 barrels in 24 hours ending this P. M.

Jan. 13. Market opened at 87½, advanced to 88⅛, receded to 87¼ and closed at 87½. Vandergrift well on Weirich farm, Washington, 10 feet in "fifty foot" rock and producing 60 barrels a day. Charter granted to Southwest Pennsylvania Pipe Line, of Oil City, for operating in Washington field.

Jan. 14. Market opened at 87½, dropped off on the start to 87⅛, rallied sluggishly to 87⅝ and remained quiet between that price and 87⅜ till toward 2 o'clock when it jumped to 88⅜, fell back to 87¾, recovered to 88½, fell off to 88 and closed steady at 88¼ bid. Chapman & Filkins well on 3782, Kane, reported dry. Meeting of the gaugers of the National Transit Company (U. P. L.) held in the assembly rooms of the Producers' Exchange, Bradford. Smith farm well, Washington, gauges 14 barrels an hour. Gantz pumping about 2 barrels an hour. Gordon No. 1 is doing 56 barrels a day. Anchor No. 7, Kinzua Village, reported small. Meeting of McCalmont Oil Company at Bradford. David Kirk elected President and Manager; F. A. Dilworth, Vice President; T. E. Tack, Secretary and Treasurer.

Jan. 15. Market opened at 88½ but weakened to 87¾ and rallied to 88c. Under heavy selling at New York in the afternoon went to 87¼, then advanced to 87⅞ and closed at 87⅝. Carrying rates—New York, flat; Oil City and Pittsburgh, 40c.; Bradford, 35c. Smith farm well, Washington, reported at 18 barrels an hour. Increased output comes from improved casing connections. Clark well on Wm. Kennedy farm, Thorn Creek, nine feet in sand and showing for 20 barrels a day.

Jan. 16. Market opened at 87¾; highest, 87⅞; lowest, 87⅜ and closed at 87⅝. Stationary boiler in Walter's flouring mill, Butler, exploded, seriously injuring two boys named Walters and Kopp. Gordon No. 2, Washington, still drilling in the stray sand and producing 30 barrels a day. Anchor No. 7, Kinzua Village, 23 feet in sand and showing for a 20 barrel well. Smith farm well, Washington, makes 370 barrels in 24 hours. Wilson & Smith well on Black farm, near Rockland Station, Venango, reported to have struck Bradford sand. Well was dry in Red Valley sand. Pipe line completed from the Smith farm well to the iron tank on the Hall farm. Smith well at Phillipsburg completed and shot with 44 quarts. Gas subsides sufficiently at the Tennent well at Kane to permit of deeper drilling.

Jan. 17. Sunday. David Charles Way, of Rochester, N. Y., instantly killed by a locomotive while walking on the Erie Railroad at Bradford. A gas well at Tiffin, O., reported filling up with oil at a depth of 1516 feet. Smith well, Phillipsburg, made about 12 barrels first 24 hours. L. B. Hoffman's two-story frame building, with a large stock of clothing belonging to John Backstrand, burned at Ludlow, McKean county.

Jan. 18. Market stagnant. Opened at 87⅞, rose to 88, weakened to 87⅜, advanced to 87¾ and closed weak at 87½. Carrying rates—35 to 50c. Southwestern Pipe Line Company is stopped in the work of laying pipe by the Clark heirs and Ephraim Hess, who refuse to permit the pipe line on their lands. Vandergrift well on I. Weirich farm, Washington, gauges 75 barrels in 24 hours; improving under deeper drilling. Production of Kinzua Village estimated at 700 barrels a day. Reep & Sutton well on Rogers farm, a quarter of a mile south of old development on eastern belt, Butler, 15 feet in sand and showing for 10 barrel well.

Jan. 19. Market opened at 87¾, dropped slowly to 87½. During the last hour a little animation set in and it moved up to 88¾, fell off to 88⅛ and closed firm at 88⅜. Heppler's general store and a blacksmith shop burned at Fern City, Cogley field. Loss, $5000; no insurance. Craig & Cappeau No. 1, Kane, gauges 81 barrels. Vandergrift (Weirich) well, Washington, reported to have made 87 barrels last 24 hours. Smith farm well flowing 15 barrels an hour. Joseph Hall well, on his property near Warren, through sand and dry. Gas well at Tiffin, O., torpedoed and a flow of 600,000 feet of gas per day results. Well contained about 300 feet of oil. A party of 100 Buffalonians, under the guidance of Dan O'Day, visit Jamestown to inspect the natural gas system of that city.

Jan. 20. Market opened at 88½, reacted to 88⅛, rallied to 88⅝, went down to and closed at 88c. Carrying rates—20 to 30c. in Bradford. Delaware Oil Works at Chester, Pa., destroyed by fire. Loss, $40,000. Election of officers of Tidewater Pipe Company at Titusville. Chairman, B. D. Benson; Treasurer, Robert E. Hopkins; Secretary, A. N. Perrine. Marriage of S. B. Hughes, the well known oil scout, to Miss Rosa Niggel at Butler, Pa. Two petroleum warehouses on Arch street, Philadelphia, destroyed by fire. Loss, $23,000; fully insured. Gordon No. 2, Washington, reaches the Gordon sand and is shut down and mystified. Smith farm well reported at 15 barrels per hour. Vandergrift well said to be doing 70 barrels. Tennent gasser at Kane drilled deeper through sand into slate without finding oil. Will drill for deeper sands. Tenth gas well struck at Findlay, O. Noble & Co. find a big gas vein near Fremont, O., upon torpedoing their well at a depth of 1400 feet.

Jan. 21. Market quiet. Opened at 87¾, advanced to 88, receded to 87¾, advanced to 88⅜ and closed at 88¼. Gabby well, Washington, again shut down for repairs to machinery. The Southwestern Pipe Line Company adjust matters with owners of Clark and Hess farms by securing Washington instead of Allegheny county bondsmen and the pipe line work is resumed. L. M. Worden, W. S. McCuen and J. H. Crozier form the Oil City Crematory Association, which proposes to establish a crematory in Oil City, using natural gas for fuel.

Jan. 22. Market stagnant. Opened at 88¼, went down to 87⅞ and closed at 88⅛. Anchor Oil Co.'s No. 7, at Kinzua Village, 80 feet in sand with no material improvement. Rig at McClane well, Washington, rebuilt and well strikes top of fifty foot sand. Gordon No. 2 drilling in Gordon sand and under guard. Heydrick & Putman well on Showers farm, Red Valley, down and dry. Hulings well, 50 rods southeast, starts at 50 barrels.

Jan. 23. Market opened steady at 88⅛, fell off to 88 and advanced to 89 during first hour. It then boomed

to 90, weakened to 89¼, firmed up to 90 and sold off to 89¼. Near the close it firmed up to 89⅞ and closed with sales at that figure. Tedcastle, Orvis and Patterson reported heavy buyers in New York. Boiler of a pumping well on the Grandin lease, near Franklin, explodes and the engineer, Fred Smith, killed. Phillips Bros.' well, Shrader farm, Butler, through sand and a failure. Craig & Cappeau No. 2 at Kane strikes sand and begins to fill up with crude. Smith farm well, Washington, doing 15 barrels an hour. Maud White mysteriously burned to death on Washington street, Bradford.

Jan. 24. Sunday. Gordon No. 2, Washington, is 15 bits in the sand and as yet has shown no improvement from the Gordon rock.

Jan. 25. Market shows more spirit. Opening at 89½ it advanced rapidly to 90⅝, weakened to 89½, reacting to 90 and vibrated about that point to 1:30 P. M. During the last hour it firmed up to 90½ and then 91, at which there was considerable trading. A few minutes before the bell rang it boomed to 91½ and closed at 91⅜ bid. Carrying rates—Bradford, Oil City, Pittsburgh and New York, flat: New York buying heavily and certificates very scarce. Gabby well, Washington, has cost Pew & Emerson $12,000 and is doing about 15 barrels a day. Gordon No. 2 strikes a coarser sand and shows great improvement. Makes a flow of 60 barrels. Smith farm well flowing 17 barrels an hour. Well on McClane farm is through fifty foot rock and shows no oil. Craig & Cappeau's No. 2, Kane, seven feet in sand and produced 68 barrels first 24 hours from 9 A. M. Sunday. Application made to Council of Oil City for permission to establish a street railroad from north to south side of Oil City. Incorporators—J. B. Smithman, P. H. Judd, Wm. E. Judd, E. M. Wolfe, D. S. Laughlin.

Jan. 26. Boom in the market culminates at 92¼c., when down grade sets in. Opening at 91¼ it sold down to 90⅝, reacted to 91 and remained steady until about 11 A. M., when it boomed to 91⅞ and at 12 M. 92¼ was bid. From this point it gradually weakened to 91½. During the last half hour values broke rapidly to 91, then 90 and finally to 89½, reacting and closing at 89¾ bid. Carrying rates flat to 40c. C. P. Stevenson, a prominent oil broker, deserts the arena of the Oil Exchange to engage in the fertilizing business at Charleston, S. C. William Kinkaid breaks his leg while coasting down Centre street hill, Bradford. Craig & Cappeau No. 2, Kane, gauges 65 barrels: No. 1 is doing from 68 to 80 barrels a day. Meeting of Associated Producers Company at Bradford; Geo. V. Forman elected President and Manager. Smith farm well, Washington, flowing 17 barrels an hour. Vandergrift well on Hall farm not yet showing oil. James E. Blair awarded a judgment of $7,500 in his suit against Bradford Oil Company. Moved to set aside verdict and order a new trial. Phillipsburg Oil Company's No. 1 well on Trumpeter farm shot with 80 quarts and makes a good response.

Jan. 27. Market opened steady at 89¾, went down to 89½ and reacted to 90c. Sold down to 88⅝ under idle rumors of failures in New York, but rallied again to 89½, then to 90⅛, fell off to 89 and closed at 89¼. Carrying rates flat in all Exchanges. Explosion of natural gas shakes up Jamestown somewhat. No one injured. Gordon No. 2, Washington, doing 70 barrels a day. McKinney well on Montgomery farm, midway between Gordon and Smith wells, makes its first flow from the Gordon sand. Smith farm well 16 barrels per hour.

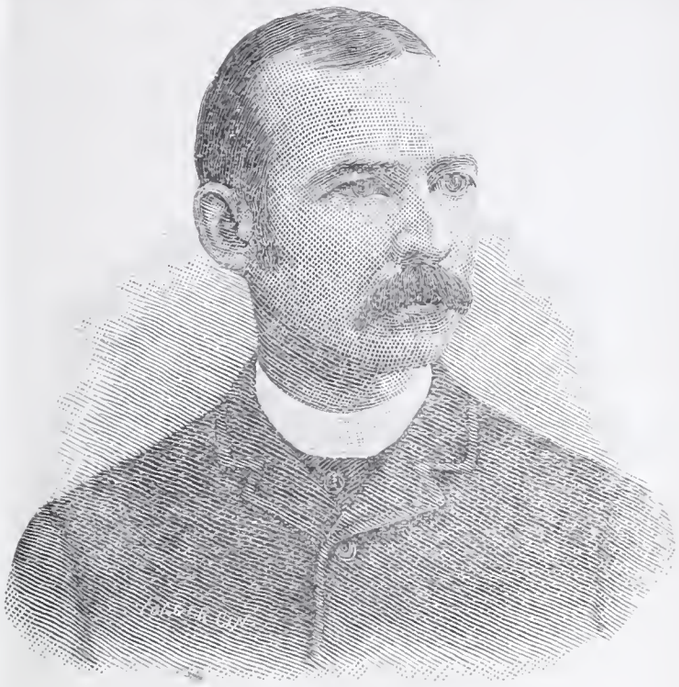
Jan. 28. Market opened at 89½, which was the highest point for the day, and closed at 87¾, the lowest. Weakness caused by bearish news from Kane. Carrying rates—Bradford, flat; New York, 60c.; Oil City and Pittsburgh, 20c. Small fire at Red Rock, on O., B. & W. R. R.: one building destroyed. Heavy fire at Franklin. Opera House block, owned by Hanna & Duffield, entirely consumed. Loss, $91,300; insured for $55,000. Associated Producers' No. 1 on 3767, Kane, strikes the sand and makes a fair showing. Shirley & Hochstetter well on 424 shut down in sand; still a mystery. Montgomery farm well, Washington, is four or five feet in sand and flowing about 30 barrels a day. It found no oil in either the Gantz or "fifty foot" sand. Gordon No. 2 through 29 or 30 feet of sand and supposed to be doing about 60 barrels. Vandergrift No. 1 on the Gen. Hall is through the Gantz and fifty foot sands, with no oil. Vandergrift No. 1, Weirich, doing 60 barrels from fifty foot rock.

Jan. 29. Magnified reports from the Kane Oil Company's well cause a four cent break in the market. Opening at 87⅜ it sold off to 87 and rallied to 87¼. From this point it broke with few reactions to 85½, rallied to 86 and vibrated between 85 and 85⅞ for some time. About 2 o'clock it sold down to 85, firmed up to 85¼, but broke rapidly to 84½. At 2:30 it took another tumble to 83½, rallied to 83⅞ and closed at 83⅝ bid. Carrying rates—Bradford, 15 to 50c.: New York, 65c.: Oil City, flat; Pittsburgh, 50c. The Kane Oil Company (Porter, Gilmor *et al.*) well on lot 426 makes 130 barrels first 21 hours, and depreciated stock in the Kane field begins to advance. Associated Producers' No. 1 made 60 barrels first 19 hours. Meadville Natural Gas Company begin laying pipe in Meadville. McClane well, Washington, goes through Hess gas sand and fifty foot without finding gas or oil. Reached stray, above Gordon, this morning and found good vein of gas. Smith farm well reported at 330 barrels for 24 hours. Anchor No. 7, Kinzua Village, made 30 barrels last 24 hours. No. 1 is doing 105 and No. 5 100 barrels a day.

Jan. 30. Market opened weak and panicky at 83 and in five minutes was offered at 81¾. From this it firmed up to 82½, broke to 82, reacted to 82½ and remained steady about this point for some time. About 2 P. M. it bounded to 83½, sold off to 82⅝, firmed up to 82⅞ and closed at 82½ bid. Carrying rates—Bradford, 60c.; New York, 85c.: Oil City, 10 to 15c.: Pittsburgh, 50c. McMullen & Simpson well at Kane reported dry. Mulholland well on Lead Works lot, Washington, reaches the Gantz sand and fills up 200 feet with oil.

Jan. 31. Sunday. Kane Oil Company's well on 426, Kane, reported 150 barrels for past 24 hours. Craig & Cappeau No. 1 gauges 65 and No. 2, 61 barrels.

THE Oil City *Blizzard* says: "Col. A. J. Greenfield, our newly appointed Postmaster, will probably make as good a Postmaster as any Democrat can, and at the present time there seems to be a quite prevalent belief that Democrats are composed of the correct kind of stuff to make Postmasters. No better selection could have been made. Colonel Greenfield has always been a staunch Democrat, a firm believer in Democratic principles and an untiring worker in the party. He was a gallant soldier, was at one time the Democratic Mayor of Republican Oil City, has been President of the Oil City Oil Exchange, was a Cleveland Presidential elector and is thought well of by his neighbors and acquaintances. While some of the other applicants were without doubt quite confident of success, and will feel their disappointment proportionately, none can deny that Colonel Greenfield possesses in an eminent degree all those characteristics necessary to a successful administration of the affairs of the office."



ROBERT W. CRISWELL.

THERE is something marvelous about the rapidity with which a howling wilderness is transformed into a teeming city through the medium of an oil excitement. A vast amount of energy is expended in working such a magical change on the rude surface of nature, and probably in no other portion of the world have such grand transformations taken place in the same time. Along with this mad rush of men in pursuit of crude wealth the oil region journalist has kept pace and newspapers have grown up with the oil development which in their time have been engines for good and evil throughout the State and land. The oil region newspaper man has more than kept pace with the development of the region; he has paved the way for its accomplishment by disseminating accurate information where doubts invested its prospects and pioneer ventures. Among the men who have made oil region newspapers known abroad and respected at home R. W. Criswell, whose portrait appears in this number of the AGE, stands pre-eminently above the others. He is now managing editor of the Cincinnati *Enquirer* and John R. McLean's able lieutenant. And any resident of the oil country in traveling over the broad geographical range of this great paper of the mighty West, as he becomes absorbed in its sixty-four columns of news gleaned with a keen scent from the four corners of the globe, takes pleasure in informing his fellow traveler that R. W. Criswell, its managing editor, is an oil region journalist.

Robert W. Criswell first saw the light of day in 1848 as it streamed through the sombre pines in the lumber woods of Clarion county, Pennsylvania. His father, Robert Criswell, who was extensively engaged in lumbering, came to Venango county to operate in oil about the time the oil excitement found its way down the creek from Watson's flats below Titusville. At first unsuccessful, he finally struck oil and sold out at a handsome figure and moved his family to Aurora, a suburb of Cincinnati, when the subject of this sketch was sixteen years of age.

Young Robert was sent to Moore's Hill College and afterwards to the Chickering Institute, Cincinnati. At school he disagreed with his teachers concerning the rights of pupils to absent themselves for a number of consecutive days from recitations, and at the end of a year retired to his home. After leaving school he drifted between his Indiana home and the oil regions, occasionally writing odd sketches for the newspapers under the *nom de plume* of "Cris." His first regular work was done on the East Brady and Fairview papers, which were conducted by Col. Sam Young, who is still following the weekly grind of a country editor in Zelienople, Butler county, Pa. While employed on the Fairview paper Criswell took an interest in the famous "Boss well," which was drilled on the Cross belt near Petrolia. Oil was struck on the 7th of July, 1874, and the well proved one of the largest ever discovered prior to the Thorn Creek development. After retiring from Col. Sam Young's employ Criswell is next heard of as the traveling correspondent of the *Enquirer*. In the spring of 1877 Mr. Frank Taylor withdrew from the editorial management of the *Derrick* to start the Oil City *Sunday Call* and Criswell was offered the position thus made vacant, which he accepted, as it gave him an opportunity to follow his humorous bent. Through the fresh and original humor which bubbled forth in its stray sand column the Oil City *Derrick* became known throughout the United States. Criswell is known abroad by his Shaksperian travesties, the great stories which Grandfather Lickshingle told through him and the humorous paragraphs which have started from his pen on their merry round through the many papers which devote some of their space to making the world laugh. Those who have a personal acquaintance with Criswell know him to be a steadfast friend and a man who cannot be bought or bulldozed into sanctioning an unprincipled action. The paper upon which he worked could be sold to the officers of a corporation but Criswell never had a price, notwithstanding it is said that every man has a financial rating. When the *Derrick* passed from Mr. Longwell's control Criswell returned to the Cincinnati *Enquirer*, where he has since remained with the exception of a few months devoted to the *Petroleum World*, which failed on account of having a poor location and the disagreement of its managers.

Mr. Criswell is remembered by the oil producers as a man who always championed their interests and one who

never swerved from the path of duty as his honest nature saw it. While attending to his arduous and exacting duties on the *Enquirer* he has found time to write other sketches besides those which appeared in the *Derrick* in days gone by and has published them in two books—"The New Shakespeare" and "Grandfather Lickshingle."

T. W. HARTMAN has purchased an oil farm at St. Joe, in Butler county, and built a cozy house on one of its sunny slopes. Almost any fair day "Old Gray" may be seen on the road between St. Joe and Millerstown.

A CHARTER was granted to the Southwest Pennsylvania Pipe Lines, at Harrisburg on the 13th of January. The capital stock is $500,000. Benjamin Brewster, of New York, holds 4950 of the 5000 shares of stock subscribed. The directors are: Benj. Brewster, of New York; Daniel O'Day, of Buffalo; Wm. T. Scheide and Joseph Seep, of Titusville, and Henry McSweeney, of Oil City. A 35,000 barrel iron tank has been erected on the Gen. Hall farm and another one is to be started immediately.

Alden's Cyclopedia of Universal Literature.

This work is the outcome of many years of planning and preparation. It will be an almost indispensable work of reference for every library, large or small, a trustworthy guide to what is most worth knowing of the literature of all ages and all nations. Occupying a dozen or more volumes, and yet issued at a price so low as to be within the reach of all, a familiarity with its contents will constitute a liberal education to a degree that can be claimed for few other works in existence. The work is being published in parts of 160 pages each, paper covers, at the price of 15 cents; also in very handsome cloth-bound volumes, gilt tops, 480 pages, for 60 cents. The parts can be exchanged for bound volumes at any time. Four parts are now ready, also the first bound volume; volume two will be issued in a few days. The publisher's 132-page illustrated catalogue of standard books may be had for 4 cents, or condensed 16-page catalogue free. John B. Alden, Publisher, New York; Brennan & Davis, agents in this city.

Weston Goes to the Penitentiary.

Milton Weston, the Chicago millionaire, one of the convicted Murraysville rioters, began his five years sentence in the Western Penitentiary on the 27th of January. He was convicted of voluntary manslaughter on the 28th of February and sentenced by Judge Bailey to five years imprisonment in April, 1885, but was released on $15,000 bail on May 13th, pending the argument of his case before the Supreme Court. The judgment in his case was affirmed January 4th, 1886, and the record returned for execution. An effort will now be made by the prisoner's counsel to secure his release by the Board of Pardons.

Weston and twenty-three others were arrested in the case of the killing of Obadiah M. Haymaker at the Murraysville gas well in November, 1883. His constable, A. M. Bowser, received a ten years sentence, while his counsel, Col. Archibald Blakeley, was tried, and acquitted on a slight legal technicality.

On Wednesday, the 27th ult., Weston was delivered over to the warden of the Western Penitentiay. In answer to the regulation questions it was found that he weighed 230 pounds, was 5 feet 7 inches in height, a native of Cayuga county, N. Y., had learned no trade, but was familiar with civil and mechanical engineering.

PERSONAL.

BERT GARRETT, an old timer from the region, is busy drilling for gas about the Smoky City.

A. J. STEPHENSON, of the firm of Marlin & Stephenson, represents his firm in the Exchange of the Iron City.

"SI" ANDREWS is interested with T. J. Vandergrift in leasing lands in the counties of Southwestern Pennsylvania.

COL. E. H. DYER has leased all the farms about the venerable town of Washington which were owned by widows.

HON. GEORGE K. ANDERSON, of Titusville, is one of the trustees of Washington and Jefferson College, of Washington, Pa.

J. M. GUFFEY, ESQ., is operating for gas extensively at various points about Pittsburgh and has headquarters at the Seventh Avenue Hotel.

THE Fern City *Illuminator* is the name of the paper that sheds its light weekly over the just and unjust of the naughty city of the Cogley oil field.

AT the last meeting of the Bradford, Bordell & Kinzua R. R. Col. J. J. Carter was re-elected President of the Erie narrow gauge system of railroads.

MR. G. L. BINNEY, of Tidioute, has accepted a position with A. J. Thompson, of Olean, N. Y., and is now located in the town of natural advantages.

JOHN L. O'DONNELL and Hugh T. Arters have opened a real estate office in Washington, Pa. They have leased a large amount of land in various parts of the new field.

C. ANDREWS, of Elmira, who is interested with Mr. Pagett in the purchase of the Cogley Oil Company's property, has become for the nonce a resident of Fern City.

W. S. NALLY, Archie Frazier and Charles J. Frazier, for a long time members of the Oil City Exchange, have joined the New York Petroleum Exchange and moved to Gotham.

C. P. STEVENSON, at one time one of the largest speculators in the trade, has quit the bull ring and moved to Charleston, S. C., where he will engage in the manufacture of fertilizers.

THE Gailey Bros. folded their oleaginous tents on Meeks Creek months ago and are now located at Rochester, Pa. They have leased a large amount of land and have wells producing in that section.

MR. W. R. JOHNS, a veteran oil region journalist and the author of a book on petroleum, has joined the editorial staff of the Oil City *Derrick*. He will give particular attention to the Weekly *Derrick*.

J. A. GARTLAN is scouting among the mysteries of the Kane field. Andy has been on both sides of the guard lines about mystery wells and is not easily deceived by the tactics which he has often employed.

MR. L. E. FULLER, who for the past three years has been the popular Secretary of the Bradford Oil Exchange, has taken up his residence in Crete, Nebraska, where he will engage in the banking business with his brother.

AT the annual meeting of the Western Pennsylvania Press Association, held in Pittsburgh January 14th, E. L. Christman, of the Washington *Reporter*, was elected President of the organization. The editors closed a pleasant meeting by accepting an invitation from J. M. Guffey, Esq., to visit the Washington oil field.

J. H. RATHBUN, formerly Superintendent for F. W. Andrews & Co. in the Bradford field, and later one of the oil scouts, has quit the lone pathway of the scout to assume the duties of Superintendent for Craig & Cappeau.

MR. GILMORE C. FINK has severed his connection with the Fox estate after an association in a business capacity for twenty years. He began as a pumper and subsequently became superintendent of the oil interests of the estate.

MAJOR W. C. MCCLINTOCK, a veteran oil region journalist, has been appointed oil inspector of Venango county. The Major always fills the bill in all positions in which he is placed and his appointment by Judge Taylor meets with general approval.

GEORGE V. FORMAN, ESQ., President of the Associated Producers, has left his commodious Gothic office above the Moore House and taken rooms in the Exchange building. He is now located under the same roof with the bank, Pipe Line office and can hear the click of the telegraph.

W. H. D. CHAPIN, a gentleman well versed in all branches of the petroleum trade, has formed a copartnership with George W. McMullen for the transaction of a brokerage business in the New York Petroleum Exchange. The new firm has an office at 47 Broadway, New York.

GEORGE H. DIMICK, one of the owners of the famous 646 well, which opened up Cherry Grove, is wildcatting for oil along the Ohio River below Pittsburgh. After a dusty prospecting tour through the South he has started the drill on Neville Island, down the river from the Smoky City.

EBEN BREWER, ESQ., the founder of the Bradford Evening *Star*, has purchased the interest of Hon. Chas. M. Reed in the Erie Daily and Weekly *Dispatch*. Mr. Brewer is a lawyer as well as journalist, has traveled abroad extensively and is capable of writing gracefully on a wide range of topics.

S. O. MCCALLA and Frank M. Hayes have entered into a copartnership for the transaction of a brokerage business. They have a branch office in Washington connected with private wires to Pittsburgh. By the enterprise of the new firm the oil men of Washington will be furnished with continuous market quotations.

THE Pittsburgh & Western R. R. management put an additional express train on the road for the accommodation of oil men en route for Kane. It leaves Foxburg at 6:30 A. M. and reaches Kane at 10:30; lays over there two hours and ten minutes and connects with a train on the B., R & P. R. R., which arrives in Bradford at 3:50 P. M.

MR. S. B. HUGHES, one of the pioneer oil scouts of the region, was married to Miss Rose B. Niggel, of Butler, Pa., on the 20th of January, 1886. "Si," as he is familiarly known throughout the region, posted Dan Goettle during the rise of the Bradford field, and at one time had six assistants aiding him in gathering information for Goettle, who was then known as the king of speculators.

MR. C. N. PAYNE, who for years was one of the most popular and successful speculators in the oil country, has accepted the position of General Manager of the National Transit Company's gas interests. Mr. Payne's many friends in Bradford would like to have him make a side excursion to the northern metropolis, buy out the old junk of the Bradford Gas Light and Heating Company and give us Oil City rates.

J. V. PATTON, Superintendent of the Emlenton & Shippenville R. R. during the Clarion excitement, and later connected with a railroad in Kentucky, has accepted a responsible position in superintending between 300 and 400 miles of the B. & O. R. R. Mr. Patton has headquarters at Pittsburgh, has charge of the line which crosses the Washington oil field and offers excellent facilities for unloading machinery among the new derricks.

Crude Market for January.

Three dry holes at Kane at the beginning of the month had a slight effect in strengthening values for a few days, but the advent of the Smith farm well at Washington, on the 5th, was the signal for another downward movement, which continued to be felt throughout the rest of the month. The fluctuations, however, were confined to narrow limits and an under current of strength manifested that kept the ninety cent point within easy reach until the 29th of the month, when the announcement that the Kane Oil Company's well on lot 424 was showing large was made the pretext for another break and values again descended with considerable rapidity.

The market for January opened on the 2d, the first business day of the month, with considerable buoyancy and sold up to 91⅞ at Bradford and New York and 91¾ at Oil City and Pittsburgh. The following day there was a drop to 90c., and the day after 89⅞ was touched. On the 6th the Dyer or Smith farm well was accepted as a gusher and there was a break to 86¾. It rallied from this point and reached 90c. on the 7th and 8th, but it was soon apparent that the bears possessed considerable stimulus in the shape of Washington news, and the bulls were forced to rely upon the new field at Kane, with its numerous dusters, to keep up their faith in dollar oil, as a possibility soon to be realized. The next two weeks there was a stagnant market, though all the variations were between 87 and 90 cents. The fourth week opened strong at 89½ to 90⅛, and on the 26th 92¼c. was recorded in the four leading Exchanges as the highest price for the entire month. The 29th was a Black Friday on a reduced scale, for with the coming in of the Kane Oil Company's well, at 150 barrels a day, the bulls lost their favorite argument, and values went down to 83⅜ with a rush. The last day of the month crude certificates sold down to 81½ at Pittsburgh and New York, 81⅝ at Oil City and 81¾ at Bradford. These were the lowest figures for January. The month closed with crude at 82½ and 82⅝.

The range of prices for January was 10½ cents as compared with 8⅜ cents in December, 23⅞ cents in November, 12½ cents in October, 4¼ cents in September and 7¼ cents in August. The average price for the month on the floor of the Bradford Exchange was 88¼ cents against 89⅝ in December, 104⅜ in November, 105½ in October, 100¾ in September and 100⅜ in August. The average price for January one year ago was 70¾ cents.

THE CLEARANCES.

	January. Barrels.	December. Barrels.
Bradford Oil Exchange	55,556,000	50,662,000
Oil City	103,522,000	116,066,000
New York Consolidated Exchange	272,485,000	274,906,000
Pittsburgh Petroleum Exchange	60,463,000	61,426,000
Philadelphia Oil Exchange	19,735,000	23,552,000
Total	511,761,000	526,612,000

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO JANUARY 31, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,0 2
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5, 80
December	98,582	17 342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883					
January	102,705	50,590	10,349	162,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217.408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58.619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,553	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	27[illegible],673	8,925
ovember	32,711	97,516	114 233	244,490	8,150
December	32,885	89,164	116,747	2 8,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884					
January	23,787	90,145	87,061	200.993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87 193	251,784	8,445
April	31,191	226,860	71,989	230, 40	7,668
May	30,010	107 514	70,069	207,593	6,696
June	25,348	89 554	67,508	182,410	6 080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67 883	151,913	4,900
September	19,590	64,648	63,4[illegible]3	147,[illegible]91	4.923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42 025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	8[illegible]7,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25.469	62,262	2,224
March	11,558	25,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,2[illegible]6	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9 367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2, 31
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
Total Jan. 31, '86	3,511,141	2,490,515	1 967,501	7,969,157	5,808

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district up to January 31, 1886. Cherry Grove has produced 3,511,141 barrels, Cooper 2,490,515, and Balltown 1,967,501 barrels. The daily average runs from the three fields during December were 1,992 barrels, a decrease of 380 barrels from the November figures.

The daily average runs from the Cooper and Henry's Mills section for January were 623 barrels, for December 749 barrels, for November 707 barrels, for October 777 barrels, for September 918 barrels, for August 923 barrels, and for July 906 barrels.

The Balltown field had a daily average of 1063 barrels in January, 1182 barrels in December, 1030 barrels in November, 925 barrels in October, 944 barrels in September and 930 in August. Cherry Grove averaged 306 barrels in January, 442 barrels in December, 303 barrels in November and 428 barrels during October against 312 barrels in September, 363 in August, 467 in July, and 439 in June.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to January 31, 1886, inclusive, has been 7,969,157 barrels, a total daily average of 5,808 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
September	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270,644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239	Cogley.	Daily
April	280,005	9,333	Runs.	Average.
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
January, 1886	39,933	1,288	138,549	4,469

For the nine months ending with January 31, the Cogley oil field has produced 839,550 barrels of oil, a daily average of 3,217 barrels. Previous to May 15th Cogley oil was included with the general runs of the old Clarion field. The daily average for January is 772 barrels behind that of December. December showed a decrease of 175 barrels a day from the November average. November increased 477 barrels over October, while October increased its runs 1,695 barrels a day over September. The Thorn Creek and Baldridge runs averaged 1,288 barrels a day in January, 1,420 barrels in December, 1,469 barrels in November, 1,898 barrels in October and 2,021 barrels in September. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 700 barrels a day from the St. Joe and Thorn Creek districts.

The Baldridge and Thorn Creek runs were 962,801 barrels, for nine months of 1884, a daily average of 3,501 barrels. For 1885, the total runs by both pipe lines were 1,813,020 barrels, a daily average of 4,967.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	-----
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	-----
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	-----
May	73½	80¼	81½	70	99⅜	85½	79⅝	-----
June	68⅜	100¼	81	54½	117¼	68¾	82¼	-----
July	69⅞	101¼	76½	57⅝	108	63½	96⅜	-----
August	67¼	0¾	78⅔	58⅔	108⅝	81 1-5	100⅜	-----
September	69¼	9 ½	92¼	71⅓	112½	78	100¾	-----
October	88½	96¾	92¾	93⅝	111⅛	71	105½	-----
November	105⅜	91¼	82⅓	114¾	114 4-5	72½	104⅜	-----
December	113¼	92⅜	83¾	95¼	114⅓	74⅜	89⅝	-----

Macksburg Pipe Line Runs.

The total pipe-line runs from the Macksburg field for the year 1884 were 80,081 barrels. Adding the oil shipped by the West Virginia Transportation Co., 3,500 barrels, the total receipts from the field were 83,581 barrels, a daily average of 229 barrels. The gross runs of the Macksburg Pipe Line since January 1, have been as follows:

Month.	Total Runs.	Daily Average.
January	11,894	384
February	20,625	637
March	27,067	873
April	35,681	1,189
May	48,258	1 557
June	66,995	2,233
July	75,673	2,441
August	73,858	23,82
September	68,110	2,270
October	63,619	2,053
November	60,928	2,031
December	61,113	1,971
Total for 1885	613,821	1,682
January, 1886	54,806	1,768

The Refined Market.

January, in refined circles, is usually considered a very dull month for the export trade, but the first month of the new year shows a fair amount of business. Prices have ruled low on account of the unsettled condition of the crude market, but refiners appear to be satisfied and are inclined to take a favorable view of the situation. The year 1885 showed an increase of 16,326,790 gallons in the exports of petroleum over the preceding year, which is equal to an average daily increase of 44,731 gallons.

In regard to the amount of petroleum consumed in the United States a prominent refiner says:

"The home consumption is steadily growing. There was at least an increase of 13 per cent. during 1885 as compared with the preceding year. Last year it is estimated that 8,146,751 barrels of oil were consumed within our borders, against 7,201,071 barrels in 1884, an increase of 945,700 barrels. In 1884 the consumption averaged 19,729 barrels per day, while last year it had swelled to 22,320 barrels a day, an average daily increase of 2,591 barrels."

Wm. H. Samuel & Co., of Liverpool, in their annual review of the foreign situation, state: "One of the most striking features that has characterized European markets during the year that has just closed, and home markets during the first half of the year, is the greatly reduced stocks that have been held compared with previous years. The total quantity of refined oil in stock at the close of the year in the principal continental ports, including London and Liverpool, was only 529,052 barrels, against 1,047,054 barrels at the commencement of the year 1884. There has not, however, been any serious falling off in the consumption, the deliveries having been 4,810,038 barrels, against 4,870,831 during the previous year, so that the reason for the smallness of the stocks that have been held must be traced to other causes, the principal of which no doubt was the prevailing uncertainty of the effect upon the American markets of the competition of Russian oil, importers feeling satisfied that the fear of Russian competition would effectually prevent American refiners taking advantage of small stocks to advance prices. Stocks in the principal home markets—London and Liverpool—were like those of the principal continental ports, much smaller during the first half of the year than at the corresponding time of previous year, but during the latter half they have been very much the same as, and have occasionally exceeded those of the previous year. The deliveries from London show a slight diminution as compared with preceding year—590,122 barrels against 603,366, Liverpool on the other hand having increased her deliveries from 269,175 barrels in 1884 to 275,731 in 1885.

"Up to August there was really only one brand of ordinary petroleum upon the market of any importance, but from thence on to the end of the year the season has been remarkable for the introduction of new brands of American oil as well as the importation on a large scale of Russian petroleum, and the margin between the different brands has varied from 1-16@½d. per gallon. Until October Russian petroleum hardly entered into serious competition with American petroleum, the price being too high, but since then plentiful arrivals have brought it into open competition with American oil, and it has ruled from 1-16 to ½d. per gallon cheaper. Notwithstanding, however, the fact that Russian has been cheaper than American oil the demand has been very light and can hardly be said to have increased as the difference between the prices for same has widened. This is principally to be accounted for in the fact that Russian empties have not commanded prices equal to American, the difference in the prices of the oils being thereby to a great extent nullified. In quality the larger portion of the Russian oil imported has, up to the present, borne very favorable comparison with American oil, and we see no reason why, prices and other circumstances being equal, Russian oil should not be as greatly in demand as American oil. The burning quality of American oil has during the past year been more satisfactory than in the preceding year, but there has, nevertheless, been serious cause for complaint about several cargoes imported during recent months."

Stocks in Europe January 16th were 278,316 barrels behind the amount on hand at same date in 1885, and 718,758 barrels less than the available supply two years ago.

The home trade in refined has been moderately good. Quotations are 8¾ and 9c. for 110° test, 9¼ to 9¾ for 120° test, 8⅞ to 9¼ for 130° test, 9½c. for N. Y. State test and 10¼c. for 150° test, water white. Naphtha is higher at 8¼c. for prime city. Refined in cases is in good demand at reduced quotations of 8⅝ to 9¼c., according to brand. The total clearances for January in this class of goods to China and the East amounts to 1,155,852 cases, an increase of 276,687 cases over the same month in 1885.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 31st of January, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA—January	4 9,558	255,239
JAPAN— "	101,342	137,212
INDIA— "	348,824	334,114
JAVA, SINGAPORE, ETC.—January	276,598	152,600
Total to Jan. 31	1,155,852	879,165

REFINED QUOTATIONS FOR JAN'Y.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1						
2	7⅞	7⅝	7⅝	7¼	7.00	19
3						
4	7¾	7½	7½	6½	7.00	18¾
5	7¾	7½	7½	6¾	7.00	18¾
6	7¾	7½	7½	6¾	7.00	19
7	7¾	7½	7½	6¾	7·00	18¾
8	7¾	7½	7½	6¾	7.00	18¾
9	7¾	7½	7½	6⅞	7.10	19⅛
10						
11	7¾	7⅝	7⅝	6¾	7.10	19⅛
12	7¾	7⅝	7⅝	6¾	7.10	19½
13	7¾	7⅝	7⅝	6¾	7.10	19
14	7¾	7⅝	7⅝	6¾	7.10	19
15	7¾	7⅝	7⅝	6¾	7.15	19⅛
16	7¾	7⅝	7⅝	6¾	7.10	18⅞
17						
18	7¾	7⅝	7⅝	6¾	7.10	18⅞
19	7¾	7⅝	7⅝	6¾	7.10	18¾
20	7⅞	7⅝	7⅝	6¾	7.10	18¾
21	7¾	7⅝	7⅝	6¾	7.10	18¾
22	7¾	7⅝	7⅝	6¾	7.10	18⅞
23	7¾	7⅝	7⅝	6⅝	7.10	18⅞
24						
25	7¾	7⅝	7⅝	6⅝	7.05	18⅞
26	7¾	7⅝	7⅝	6⅝	7.05	18⅝
27	7¾	7⅝	7⅝	6⅝	7.05	18⅝
28	7¾	7⅝	7⅝	6⅝	7.05	18⅝
29	7⅝	7⅝	7⅝	6⅝	7.05	18⅝
30	7⅝	7⅝	7⅝	6⅝	7.05	18⅝
31						

PETROLEUM EXPORTS.

THE EXPORTS of Petroleum (refined, crude and naphtha) from all United States ports from January 1 to January 30, for the years 1885 and 1886, were as follows:

	1886.	1885.
From Boston ..... galls	325,889	220,386
Philadelphia	9,049,920	3,944,930
Baltimore	398,178	439,955
Total ..... galls	9,800,987	4,605,271
From New York	30,936,765	28,078,174
Total Exports from United States	40,737,752	32,683,445

The appended table, from the *Shipping List*, gives the total Exports of refined, crude, naphtha and residuum from New York to foreign ports from January 1 to February 6, for the years 1885 and 1886:

REFINED.

	1886.		1885.
GT. BRITAIN—London	2,799,452	------	1,434,458
Liverpool	1,008,285	------	1,346,019
Bristol	544,08	------	890,025
Ireland	496,585	------	508,820
Other Ports	590,070	------	1,809,411
		5,418,472	5,988,733
GERMANY—Bremen	549,099	------	908,074
Hamburg	1,9 0,509	------	1,957,095
Konigsburg and Stettin	262,232	------	273,267
Dantzic	------	------	133,418
Other Ports	------	------	------
		2,796,840	3,271,854
FRANCE—Marseilles	------	------	------
Havre	------	------	------
		------	------
NORWAY AND SWEDEN	136,710	136,710	------
RUSSIA AND FINLAND	------	------	------
		------	------
DENMARK—Tuborg	225,847	------	------
Aarhuus	------	------	------
Aalborg	------	------	------
Copenhagen	------	------	207,416
Elsinore	------	------	------
Kastrup	------	------	------
Other Ports	------	------	------
		225,847	207,416
BELGIUM	3,732,723	3,732,723	2,359,889
		------	------
HOLLAND—Amsterdam	1,808,544	------	1,683,613
Rotterdam	1,811,380	------	909,299
Harlingen	------	------	------
Flushing	395,054	------	------
		4,014 978	2,592,912
Spain	------	------	------
Portugal and Azores	203,049	203,049	163,484
Gibraltar and Malta	60,000	60,000	------
Italy	------	------	115,252
Austria—Trieste, &c	------	------	------
Greece	------	------	------
Turkey in Europe	388,110	388,110	492,820
Turkey in Asia	------	------	321,100
Arabia	------	------	------
		------	------
INDIA AND SIAM—Bombay	1,602,180	------	1,215,820
Calcutta	553,550	------	2,125,320
Point de Galle and Colombo	------	------	------
Bangkok	------	------	335,000
Kurrachee	409,980	------	------
Madras	------	------	------
		2,565,710	3,666,140
CHINA & JAPAN—Shanghae	3,305,630	------	1,487,500
Hong Kong	1,093,250	------	1,114,890
Yokohama	613,420	------	2,022,910
Saigon	------	------	------
Tientsin	205,730	------	------
Nagasaki	------	------	------
Hiogo	------	------	------
		5,218,030	4,575,300
EAST INDIES—Anjier	330,000	------	1,201,000
Batavia	1,224,780	------	------
Iloilo	------	------	------
Manila	------	------	------
Padang	------	------	------
Penang	------	------	------
Rangoon	917,530	------	------
Singapore	830,590	------	------
Banjermassin	------	------	------
Macassar	------	------	------
		3,302,900	1,201,000
AFRICA—Alexandria, &c., E	------	------	547,380
Canary Islands	1,500	------	------
Other Ports	478,800	------	114,110
		480,300	661,490
Australia	252,720	252,720	527,990
New Zealand	256,800	256,800	217,932
Sandwich Islands	------	------	------

REFINED—CONTINUED.

	1886.		1885.
SOUTH AMERICA—Brazil	775,403	------	907,965
Argentine Con. & Uruguay	335,230	------	121,000
Chili and Peru	117,000	------	74,000
United States of Colombi	36,587	------	53,535
Venezuela	70,567	------	57,641
Other Ports	1,250	------	4,010
		1,336,037	1,218,151
Central America	16,547	16,547	22,453
Mexico	105,930	105,930	147,356
British North American Colonies	126,118	126,118	172,101
Cuba	25 660	25,660	77,981
British W. Indies & B. G. Guiana	170,287	170,287	230,968
Other West Indies	119,280	119,280	173,652
Total ..... galls	30,953,048	30,953,048	28,405,974

CRUDE.

	1886.		1885.
FRANCE—Havre	694,176	------	1,468,967
Marseilles	527,074	------	------
Bordeaux	301,836	------	571,024
Dunkirk	291,523	------	274,713
Cette	263,902	------	687,857
Rouen	------	------	253,524
Les Sables o' Ollone	187,621	------	119,961
St. Lonbes	------	------	------
Blaye	------	------	------
Dieppe	308,550	------	------
		2,574,682	3,376,046
Bremen	433,500	433,500	------
Austria—Fiume	------	------	------
Norway and Sweden	------	------	------
		------	------
SPAIN—Alicante	286,291	------	322,830
Pasages	138,000	------	67,792
Bilboa	172,584	------	260,000
Barcelona	------	------	------
Carthagena	------	------	------
Corunna	------	------	233,000
Malaga	------	------	------
Santander	------	------	165,350
Seville	------	------	139,000
Tarragona	------	------	83,910
Valencia	------	------	------
Palma	------	------	------
		696,875	1,271,882
Cuba	526,913	526,913	340,878
Other Ports	------	------	------
Total ..... galls	4,131,970	4,131,970	4,988,806

NAPHTHA.

	1886.	Total.	1885.
Great Britain	189,722	------	340,878
France	253,052	------	270,000
Germany	------	------	201,145
Other Europe	------	------	170,241
Various Ports	550	------	21,438
Total ..... galls	443,324	------	965,232

RESIDUUM.

	1886.	Total.	1885.
To all Ports ..... galls	257,304	------	305,000

Total Refined since January 1, actual shipments, galls., 32,880,366, Crude equivalent ..... galls. 43,840,488
Total Crude since January 1, actual shipments 4,307,570

Grand Total Crude and Crude equivalent ..... galls. 48,148,058
Same time, 1885 45,453,411

The following table shows the number of vessels loading and to load with Petroleum at the principal American shipping ports, February 6, 1886:

PORTS.	Refined Bbls.	Refined Cases	Crude	Naphtha	Residuum	Total.
New York	26	51	6	0	0	83
Philadelphia	18	8	8	1	0	35
Baltimore	5	0	0	0	1	6
Boston	0	0	0	0	0	0
Total Feb. 6	49	59	44	1	1	124
Total Jan. 8	52	52	17	3	1	125
Difference	3	7	3	2	0	1

THE PETROLEUM AGE,

DEVOTED TO THE

INTERESTS OF THE PETROLEUM TRADE.

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THE PRODUCING REGION.

At the beginning of January there were 273 new rigs and 345 drilling wells in the entire region, including Washington and the adjacent counties. Out of this total, 618, 265 wells were completed, which on the last day of the month were estimated to have had an output of 2983 barrels. The number of dry holes was 45, leaving 220 productive wells, with an average yield of 13½ barrels. During December the entire region completed 310 productive wells and 45 dry holes, and the average of the new wells, December 31, was estimated at 12½ barrels. At the close of January there were 273 new rigs, 123 old rigs and 331 drilling wells in the whole field. Interest in Kane and Washington has been revived by the success of the January strikes. While Kane appears to afford prospects only for a limited extent of productive territory, the Washington district holds forth promises of becoming an extensive producing region.

ALLEGANY FIELD.

The operators in the northern borders of the Allegany field were treated to a genuine surprise January 23d in the shape of a 75 barrel well on the Labar farm, lot 55, Wirt township. This section has been considered gassy and light, but this well is said to have found 32 feet of good sand below the gas producing rock. Its success has stimulated active operations and swelled the total of new rigs in the entire field. The stretch of country between lot 10, Clarksville, and 48, Wirt, is being drilled on a narrow line, with dry holes and gassers on both sides.

D. Kane & Co. on lot 12, Alma, drilled 1165 feet without results, save a small show of gas. The National Transit Company completed a gasser on lot 3, Clarksville, while Lester, Jordan & Co. on lot 51, and Anderson & Bradley on lot 61, Wirt, secured the same kind of results. The Lovell & Co test in Steuben county was a failure. The wild-cat ventures of the Allegany field and country adjacent are Miles & Co. on lot 26, South Alma; Middaugh & Co. in Amity township; Duke & Co. and Watson & Co. in Potter county. Lovell & Co. will drill another well in Steuben county, N. Y., while some Elmira parties are about to start the drill near Gaines in Tioga county, Pa.

Only 44 new wells were completed in the Allegany field in January and 5 of these were dry. This includes one venture in Steuben county. The average of the new wells is above 6 barrels. On the last day of January there were 57 new rigs, 35 old rigs and 40 drilling wells in this field, a net increase of 2 over the December figures. The pipe line runs from the Allegany field averaged 6235 barrels a day in January, 6738 barrels in December, 6667 barrels in November and 7081 barrels in October.

THE BRADFORD FIELD.

On the last day of January there were 34 new rigs, 34 old rigs and 67 drilling wells in the Bradford field. The count at the close of December recorded 37 new rigs, 31 old rigs and 61 drilling wells. The wells completed in January numbered 44, including 3 dusters. The break in the crude market has checked the operations of the producer, who has been so active throughout the past year in developing the inferior territory that yet remains along the borders of the great northern oil basin. The new wells in January average about 8 barrels each. Of the three dusters that of Wolfe & Wilcox, south of Port Allegany, though in McKean county is outside the developed lines of the Bradford field. F. E. Boden is credited with another duster on the Mack lands, near the head waters of Marilla brook, and the Eldred Gas Company completed a fair gas well on the Youngs farm, east of Duke Centre. The test well of C. C. Conroy & Co. on the Freeland farm, a mile southwest of Allegany, and north of the State line, is asserted to have discovered fair prospects for oil in that locality. The projectors control a large body of land thereabouts, and along with other parties are making a determined effort to discover another dark sand oil horizon between the Bradford and Allegany fields. Blakeslee & Co. have an interesting experiment near the sand in the vicinity of the McCormick well, north of Olean. Curtis & Co. have a rig up in the same neighborhood, awaiting decided information from the Blakeslee venture. P. F. Kearns' wild-cat on lot 137, Hamilton township, is shut down at 1450 feet. The well will probably be drilled to a greater depth the coming spring. H. O. Robbins & Co. are drilling on the Wall farm, near the Smiley & Howe well, west of Bradford, and the Royal Oil Company will sink a well on warrant 4907, between the Quintuple tract and the head waters of Sugar Run. The January pipe line runs from the Bradford field averaged 27,966 barrels a day, a decrease of 2410 barrels from the December average. December showed an increase over November of 1259 barrels a day.

WARREN AND FOREST.

There were 83 wells completed in the Middle Field during January, 13 of which were dry. The new production was rated at 795 barrels. Four of the productive wells and three dry holes were found in the new district at Kane. Clarendon and Tiona completed 50 wells, including three dusters. In December 96 wells were finished, only 7 of which were classed among the failures. On the last day of January there were 67 new rigs, 16 old rigs and 89 drilling wells in this field, as compared with 95 new rigs, 12 old rigs and 84 drilling wells on the 31st of December.

KANE.—Only one new rig was started in the Kane field in January, but since the 1st of February the success of the Kane Oil Company's well on lot 424 has started anew the dormant energies of the land holders in the northern end of the district. Four failures, following close upon the heels of Craig & Cappeau's first well, and the unsatisfactory reports from Shirley & Hochstetter's venture on lot 424, united to cast a gloom over the budding field at Kane and cause the investors in high-priced territory to feel exceedingly unhappy. The Chapman & Filkins well on the northeast corner of 3782 was pronounced dry on January 14th, and from this time until the 24th, when Craig & Cappeau's No. 2 was brought in, confidence in the future of the Kane field was at a very low ebb. On the 28th the Associated Producers' No. 1 on 3767 struck the sand, with a good showing of oil, and the next day the Kane Oil Company's No. 1 on 424 was

reported at 130 barrels for the first 21 hours' production. This was the signal for reviving hopes in the much depressed district and lands to the north once more began to rise in value. Since the 1st of the month two light wells have been completed on what is believed to be the southern edge of the field, viz.: McMullen & Simpson on subdivision 19, and Bayne & Fuller on subdivision 20, of warrant 3775. Near the north line of the same warrant P. T. Kennedy has a good well on subdivision 12 and the Kane Oil Company has drilled a gas well and a fair oil producer in close relations to each other on subdivision 11. Roy, Archer & Clemenger have finished a good gas well near the southeast corner of warrant 3767; it is about 600 rods directly east of the Chapman & Filkins duster and makes the third gasser that has been drilled on the eastern border of the district since the initial producer was struck. Markham & Thyng are drilling on subdivision 10, directly between the gas wells of the Kane Oil Company and Roy, Archer & Clemenger.

Kinzua Village.—Nothing of a startling nature was heard from Kinzua Village during January. One of the two salt water wells on the southwestern edge of the field has been developed into a good pumping oil well, which started at 50 barrels a day. The success of this venture has started several new rigs in the same vicinity, one of which has been erected within the sacred precincts of a family graveyard. The well of Collins & McCalmont Oil Company, near the northwest corner of the Wm. Marsh farm, on warrant 3724, and directly south of the Anchor No. 6 duster, was a failure, as foreshadowed by the results at No. 6. Anchor No. 7, on warrant 3725, on a good northeast line from the famous No. 5, has been drilled through 80 feet of sand, is pronounced but little better than a 20 barrel well and indicates that the limits of the pool in that direction are being rapidly approached. At the present time it appears that the northeastern extension of the Kinzua Village development will be rounded out inside the boundary lines of the Anchor Oil Company's property on warrant 3725. Pickett, Stone & Co.'s test on warrant 3729, north of Kinzua Village, proved a failure. The Barnsdall & Sill venture on the Herzell lands on the south side of the Allegheny river, between Warren and Wardwell, is practically of little value. The owners were searching for a northern outlet to the Stonehill development. On warrant 2921 Duffield & Co. have a doubtful venture under way. It is located near the southeast corner of the warrant and has been drilling for several months. It will doubtless appear in the February report as a positive duster.

Clarendon and Tiona.—The well of S. B. Logan, H. A. Jamieson and others, near the southwest corner of lot 41, which was reported at the close of December as showing for a small well, and proving the extension of the Tiona field far to the northeast, is a total failure so far as the production of oil is concerned. A fair supply of gas was discovered, while the showing of oil was very slight. Booth Bros.' No. 3, on lot 83, one location due east of No. 1 and about two miles southwest of the 41 experiment, was likewise a failure. It marks the sudden breaking off of the Tiona sand on the east and will discourage any farther ventures in that direction. Between this point and Tiona, Fertig, McKinney & Co. control all the available territory. This enterprising firm have secured about 3900 acres of land in this region, which will afford them locations for profitable wells for many months to come. The calibre of the district is not large, but low priced wells and the cheap cost of production make a small margin of profit possible even when the crude market rules below the dollar mark. Several very good wells have been completed in close proximity to Tiona Station by Wesley Chambers, Short & Dunham and others. On the extreme southwest operations are more active. The Anchor Oil Company have secured the eastern part of lot 284 and commenced drilling. Pickett & Co., Hackett & Shirley and Watson & Mitchell are all busy on the same lot. West of Tiona, Miller & Co. completed a duster near the southeast corner of lot 566.

Cooper and Balltown.—The Cooper district was very quiet, while Balltown completed its usual number of wells in January. Both sections show a falling off in production as estimated from the pipe line runs, amounting to an average decline of 245 barrels. The runs from the two districts were 1686 barrels a day in January and 1921 barrels in December. J. M. Clapp, Lockhart & Elder got a fair well on lot 369, at the northeast terminus of the Cooper district, while Fertig & McKinney secured another fair well in the vicinity of the old Green & Darling wells near Foxburg. An effort is being made to resuscitate the old Adams & Story duster on lot 398 by Pickett & Stone. The experiment of Barnes & Co. on lot 408 proved a duster.

At Balltown, May, Kelley & Grandin completed three wells in January, on the southwest, of much smaller calibre than than those usually struck in that favored locality, which would make it appear that the rich streak is nearly at an end. The indefatigable Welsh will make a fourth attempt to discover an extension to this belt, on the warrant adjoining the Grandin leases to the southwest (5214). The annex to the northeast invites little attention since the completion of another duster along the southern border. N. F. Clark is credited with two wells of the usual size on warrant 3195, while Haight, Agnew & Co. found a small well on 3198, west of the lower part of the Cooper district.

Grand Valley.—This old pool in Eldred township, Warren county, is inviting considerable prospecting, and hopes are rife that something pretty large may be struck in the near future. Four wells were completed in this district in January and 19 rigs and drilling wells were under way on the last of the month. Most of the production of this district finds its way to Titusville over the D. A. V. & P. railroad.

THE LOWER COUNTRY.

The figures from the Washington county field and from Greene, Beaver and the adjacent country appear for the first time in the totals of the monthly field report. But, notwithstanding these additional sections, the lower country shows a falling off of 47 wells completed and 532 barrels in new production. The country stretching from Titusville on the north to the limits of Washington and Greene counties on the south completed 94 wells in January, 24 of which are rated with the failures. In December 141 were completed, including 31 dusters. On the 31st of January there were 115 new rigs, 38 old rigs and 135 drilling wells in the entire lower country, as compared with 109 new rigs, 30 old rigs and 138 drilling wells on the 31st of December.

Venango.—Interest in Venango county centers about two sections—Red Valley and Tarkill. The latter has been in a mystified condition since last September, while the former has been recognized as a productive pool of fair calibre for several months. Both furnish wells, of the same general characteristics as Cogley, though neither will probably prove so extensive in area as their Clarion county neighbor. In the Red Valle

section 13 productive wells and 4 dry holes were completed in January. The field has assumed definite shape on the northwest and southeast, numerous dusters allowing for it a width not exceeding three-quarters of a mile. Nothing interferes with its free extension to the southwest, but as yet operators have not been inclined to reach out very far in this direction. The Blakeslee & Heydrick duster on the Johnson farm, noticed in the December AGE as on the southwest of the field near the river is really on the northwestern borders and lines in with the dry holes to the northeast on the Jolly farms. Heydrick, Hite & Co. by a careful series of levels theorized that the trend of the oil producing rock was more nearly to the west, but their experiment on the Showers farm failed to establish the hypothesis. The well of A. A. Hulings & Brother, only a short distance to the south and west, proved a fair producer. The Forest Oil Company's No. 2, on the furnace tract, completed since the 1st of the month, is rated as a 12 barrel pumper. It is 100 rods due south of No. 1 and makes land in this direction appear very desirable. The length of the field from the farthest well on the northeast, that of Heydrick, Hite & Co. on the John Hetzler farm, to this last well of the Forest Oil Company is about two miles.

The two wells of Taylor, Torrey & Murphy at Tarkill were opened up to the public Feb. 9th and shown to be netting about 140 barrels of oil every 24 hours. Sand was struck in the first well Sept. 16, 1885, at a depth of 943 feet. The first bit it filled up 300 feet with oil. It was immediately shut down until December, when it was drilled through 33 feet of productive sand. In the meanwhile a second well was put down on the Wm. Hill farm, a half mile due north, which proved dry at the depth where oil should have been found. It was sunk to the Speechley sand and developed into a good gas well, the product of which was utilized in pumping the first well. The third well has been completed since the 1st of the month and is doing 80, while the first is rated at 60 barrels. Gas from the Hill well is run directly into the engines at the other wells and the pumping is done very quietly without the intervention of steam. The sand horizon is said to be identical with that of Gas City and Cogley Run, and corresponds with the regular Venango county sands. The gravity of the oil is 49½ degrees Baume, which is the same as that of the Cogley oil. The Speechley gas wells are on the northeast of the Tarkill district, while the two dusters of Baume and one of Koch Bros & Goettel are in range on the southwest. Venango county completed 24 wells and 17 dry holes in January and there were 43 new rigs, 8 old rigs and 32 drilling wells in the field at the close of the month.

CLARION.—There is but little of interest to pencil concerning the Cogley district. The summit of its production has been passed and its bordering lines are fairly well established. During January throughout Cogley and the remainder of Clarion county 32 wells were finished, having a new production on the last day of that month of 527 barrels and two of the wells were dry. The report for the month of December showed 66 new wells, with a production on the last day of that month of 1562 barrels and nine of the wells finished that month were failures. The number of rigs up and building and wells drilling was also reduced. On the last day of January there were 24 new rigs, 13 old ones and 28 wells drilling in Clarion county. The count of thirty days previous gave 32 new rigs, 11 old ones and 35 wells drilling, making a total of 78. A well on the Lynn farm, near Ninevah, attracted some attention by making a showing of heavy oil from a sand found at a depth of 1185 feet. The successful development of the Cogley district is to be followed by a large amount of wildcatting in various parts of Clarion county. McGrew Bros. are starting a test well near Lucinda Furnace, and Edenburg parties have leased quite a large amount of lands on Blyson Run, about four miles northeast of Strattonville. The average daily pipe line runs from the Cogley field during January were 4469 barrels and the December average was 5741 barrels. A still further decline may be expected from this section.

BUTLER AND ARMSTRONG.—Only 16 wells were finished in the Butler and Armstrong fields during January, having on the last day of the month a production of 232 barrels and four of the number came in dry. In December 22 wells were added to the completed list, having a yield at the close of that month of 173 barrels. Eight of the number were dusters. On the last of January the canvass of the field showed 25 new rigs, 7 old ones and 35 wells drilling, a total of 67. The count at the close of December gave 14 new rigs, 10 old ones and 31 wells drilling. There is some activity to be noticed about Reibold Station and the small well drilled months ago by Painter Bros. is becoming the nucleus of a new pool. Three fair wells were completed at the extreme eastern end of the Thorn Creek pool during January. Clark & Co.'s well on the northwestern corner of the William Kennedy is slightly in advance of developments. Phillips Bros. are still searching for a new pool east of Thorn Creek, with the same results that have characterized their investigations for months. On the A. Shrader farm they found 16 feet of fourth sand at a depth of 1717 feet, which did not disclose any traces of oil. Their well on the Jas. Wright farm, a mile northeast of the Shrader, will make a small producer. The Dennison well on the Miller farm, east of Millerstown, is the center of a dozen new rigs and drilling wells. At present operators are sinking wells on a line running in a direction of south twelve degrees east from the Ort farm group. Showalter Bros.' well on the McKeever farm will test the middle ground along the line between the two developments.

THE Pittsburgh Petroleum Exchange decided to change its name and amend its charter on Jan. 11th, so that it shall be known as Pittsburgh Petroleum, Stock and Metal Exchange. Of the 1500 shares, 1185 were voted in favor of the amendment and nine against.

THE Mahoning Natural Gas Company, of New Castle, Lawrence county, Pa., has applied for a charter. It proposes to mine for natural gas in the counties of Venango, Butler, Mercer, Lawrence and Beaver, and supply consumers in Mercer county in Pennsylvania and in Mahoning, Trumbull, Portage, Summit, Geauga and Cuyahoga counties in Ohio. The applicants for the charter are Robert McCurdy, Thomas H. Wells, John T. Phillips, Oliver H. P. Green and Thomas W. Phillips.

THE Gordon No. 2, the property of the People's Light and Heat Company, Washington, was commenced on the 8th of October, 1885, and completed on the 28th of January, 1886, a period of 112 days. Leaving out ten days delay, on account of the destruction of the rig by fire, the drilling was done in 102 days. It is 2438 feet deep and the drill passed 30 feet into the Gordon sand, the last bit showing salt water. The drillers were J. C. Neil and G. L. Barr and the tool dressers J. B Jackson and Robert Barclay.—*Washington Reporter.*

AVERAGE DAILY RUNS BY DISTRICTS, INCLUDING MACKSBURG—1882-86.

	Bradford	Allegany	Cherry Grove	Cooper	Baltown	Wardwell	Baldridge	Cogley	Macksburg	All Other Fields	Total
1882.											
January	55,006	7,222	----	----	----	----	----	----	----	11,541	73,769
February	63,313	9,512	----	----	----	----	----	----	----	10,722	83,547
March	58,078	14,760	----	----	----	----	----	----	----	10,894	83,732
April	53,108	17,622	----	----	----	----	----	----	----	10,395	81,125
May	55,955	19,522	218	----	----	----	----	----	----	11,262	86,957
June	56,016	22,765	3,037	----	----	----	---	----	----	13,968	95,786
July	52,456	23,884	8,655	----	----	----	----	----	----	19,311	104,306
August	49,711	20,814	24,315	----	----	----	----	----	----	10,985	105,825
Sc· tem	46·585	16,387	2 ,002	----	----	----	----	----	----	10,567	96,541
October	42,107	19,964	9,363	120	----	----	----	----	----	14,286	85,840
Novem	41,404	16,993	4,886	294	----	----	----	----	----	10,012	74,589
Decem	39,580	14,020	3,180	558	87	----	----	----	----	14,993	72,419
1883.											
January	36,487	14,106	3,313	1,632	334	----	----	----	----	8,893	65,125
Februa'y	38,481	13,154	2,954	1,475	332	----	----	----	----	8,812	65,208
March	37,754	12,619	2,706	1,737	368	----	----	----	----	9,220	64,404
April	38,810	13,742	2,604	3,802	840	----	----	----	----	9,4[illegible]9	69,207
May	39,039	13,793	,2207	3,829	952	----	----	----	----	9,625	69,445
Ju e	38,614	13,499	2,215	4,199	1,961	----	----	----	----	9,955	70,443
July	36,489	12,381	1,891	3.467	1,944	----	----	----	----	9 456	65,628
August	37,165	12,743	1,935	3,166	3,078	----	----	----	----	10,790	68,877
Septem	35,894	12,358	1,612	3,200	3,723	----	----	----	----	9 423	66,210
October	35,654	12,757	1,°12	3,314	4 298	----	----	----	----	10,314	67,649
Novem	34,516	12,332	1,000	3,251	3,807	----	----	----	----	10,285	65,281
Decem	32,650	11,752	1,061	2,876	3,766	----	----	----	----	10,725	62,830
1884.											
January	31,020	11,018	767	2,908	2,838	----	----	----	86	9,657	58,264
Februa'y	33,987	12,025	968	3,743	2,876	----	----	----	51	11,[illegible]34	64,624
March	33,049	11,777	1.001	4,631	2,813	----		----	86	11,319	64,676
April	34,370	12,261	1,039	4,229	2,399	475	844	----	113	10,176	65,906
May	34,946	12,193	968	3.468	2,260	1,015	1,061	----	136	10,777	66,824
June	35,701	11,672	845	2,985	2,250	2,042	969	----	211	10,886	67,561
July	34,718	11,114	523	2,476	2,471	4,277	889	----	249	10,234	66,951
August	33,782	10,384	66[illegible]	2,046	2,189	6,483	843	----	258	10,6 4	67,254
Septem	33,449	9,989	653	2,155	2,115	4,056	2,644	----	334	10,891	66,286
October	31,500	8,802	446	1,811	1,781	2,201	6,034	----	350	10,489	63,414
Novem	29,552	8,642	423	1,302	1,401	1,346	9,493	----	431	9,592	62,182
Decem	30,632	8,193	407	1,246	1,189	979	8,730	----	315	10,367	62,058
1885.											
January	27,254	7,442	360	1.214	810	977	6,199	----	384	9,034	53,674
Februa'y	27,480	7,696	327	987	910	663	7,349	----	637	9,564	55,613
March	26,833	7,342	373	867	954	605	7,259	----	873	9,[illegible]85	54,971
April	29,557	7,738	299	1,114	775	527	9,333	----	1,189	11,019	61,551
May	28,443	7,467	343	1,053	902	722	7,488	127	1,557	10,879	58,981
June	30,662	7,680	439	1,000	1,044	764	5,905	609	2,233	11,983	62,319
July	30,657	7,363	467	906	1,032	647	3,856	1 220	2 441	10,283	59,872
August	29,291	7,102	363	923	930	----	2,268	2,115	2,382	12,731	58 105
Septem	30,151	6,647	312	918	944	----	2,121	3,244	2,270	13,8 0	60,337
October	30,828	7,481	428	777	925	----	1,898	4,9 9	2,053	14,194	63,123
Novem	29,117	6,667	303	707	1,030	----	1,469	5,416	2,031	14,162	60,902
Decem	30,376	6,738	442	749	1,182	----	1,420	5,241	1,971	15,150	63,269
1886.											
January	27,966	6,235	306	623	1,063	----	1,288	4,469	1,768	14,468	58,186

A Curious Disaster from the Explosion of Gas.

A peculiar disaster occurred to the steam tow-boat Iron City in the Allegheny river near Pittsburgh on the morning of December 2d. While returning from a trip to Herr's Island the vessel grounded near the head of the island, the stern swung about and caught on a pipe of the Philadelphia Company's line that conveys natural gas across the Allegheny river. In endeavoring to back off the pipe was broken and the escaping gas settled in the vessel's hold and caught fire from the furnace. A terrific explosion followed, the hull was burst from stem to stern and the decking blown off. A number of the crew were blown into the river, but all escaped serious injury. One man had his leg broken and another was badly bruised and burned. The vessel was destroyed. The disaster occurred at 2:30 A. M. and the ignited gas continued to burn until shut off about daybreak. The captain and crew were exonerated from all blame by the United States Inspector. On the 12th of January Captain Omslaer and crew entered suit against the Philadelphia Company, laying the damages at $40.000.

SUMMARY of the Statements of the National Transit Company for December and January:

	JANUARY. Barrels.	DECEMBER. Barrels.
Receipts from all sources	1,534,884 68	1,674,419.48
Deliveries	1,762,008.49	1,914,345 12
Gross stocks end of month	34,856,831.27	35,134,703.30
Sediment and surplus	2,963,787 32	3,005,518.48
Total liabilities end of month	31,893,043.95	32,129,184.82
Outstanding acceptances	27,567,041.53	27,838,035.03
Credit balances	4,326,002.42	4,291,149 79

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for January, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of January		1,313,404.05
Quantity of crude petroleum at close of Jan.	1,463,282.61	
Less sediment and surplus	132,983.26	
		1,330,299.35
Receipts during January		185,253.46
Deliveries during January—to refiners	194,780.43	
" " " to other parties	--------	194,780.43
Outstanding certificates, accepted orders, etc.		879,000.00
Credit balances		451,299.35
Total liabilities January 31, 1886		1,330,299.35

DECEMBER SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of December		1,352,635.70
Quantity of crude petroleum at close of Dec.	1,470,714.96	
Less sediment and surplus	127,310.91	
		1,343,404.05
Receipts during December		193,088.99
Deliveries during December—to refiners	200,470 15	
" " " to other parties	--------	
		200,470 15
Outstanding certificates, accepted orders, etc.		906,000.00
Credit balances		437,404.05
Total liabilities, December 31, 1885		1,343,404.05

THE Independent Refining interests of Oil City and vicinity held a meeting, Jan. 7th, at the office of the Atlas Refining Company, to consider the feasibility of pooling their interests in the matter of erecting lubricating and paraffine works.

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	JANUARY, 1886.	DECEMBER, 1885
National Transit Co	1,534,884 08	1,674,419.48
Tidewater	185,253.46	193,088.99
Octave Oil Co	3,664.00	3,527 99
Charley Run	------	------
Shaffer Run	------	660.50
Franklin (limited)	5,383.42	7,529.11
Pittsburgh Pipe Line	19,799.69	21,016.80
Total	1,748,964.65	1,900,242.87
Daily average	56,418.21	61,298.16

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	JANUARY, 1886.	DECEMBER, 1885.
National Transit Co	1,763,008.49	1,914,345.12
Tidewater	194,780.43	200,470.15
Octave Oil Co	3 431 00	3,972.45
Charley Run	-------	------
Shaffer Run	967 89	2,651.00
Franklin (limited)	7,557.05	3,272 91
Pittsburgh Pipe Line	22,816.02	13,541.60
Total	1,991,560.88	2,138,253.23
Daily average shipments	64,243.89	68,975.91

In the above shipments only the oil delivered to refiners is included.

Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August	11,099.01
Daily excess of shipments over runs, July	5,959.01
Daily excess of shipments over runs, June	7,992.05
Daily excess of shipments over runs, May	10,502.60
Daily excess of shipments over runs, April	494.04
Daily excess of shipments over runs, March	6,762 92
Daily excess of shipments over runs, February, 1885	9,483.63
Daily excess of shipments over runs, January, 1885	4,893.51
Daily excess of shipments over runs, December, 1884	15,064.36
Daily excess of shipments over runs, November, 1884	7,513.09
Daily excess of shipments over runs, October, 1884	17,901.36
Daily excess of shipments over runs, September, 1884	10,439.21
Daily excess of runs over shipments, August, 1884	2,593.82
Daily excess of runs over shipments, July, 1884	10,532 22
Daily excess of runs over shipments, June, 1884	6,443.56
Daily excess of runs over shipments, May, 1884	10,239.88
Daily excess of runs over shipments, April, 1884	11,020 89
Daily excess of runs over shipments, March, 1884	4,144.98

NET STOCKS.

PIPE LINE.	JANUARY 31, 1886.	DECEMBER 31, 1885.
National Transit Co	31,893,043.95	32,129,184.82
Tidewater	1,330,299.95	1,343,404.05
Octave Oil Co	3,535,00	3,822 97
Charley Run	------	3[illegible]5 00
Shaffer Run	22,083.37	22,201.22
Franklin (limited)	30,460.71	32,634.34
Pittsburgh Pipe Line	4,458.87	7,475 20
Total	33,283,881.25	33,539,037 60

Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October	184,393 91
Stocks decreased September	408,862 12
Stocks decreased August	390,529 99
Stocks decreased July	215,947.71
Stocks decreased June	356,849 49
Stocks decreased May	565,252.48
Stocks decreased April	42,525.72
Stocks decreased March	248,900 89
Stocks decreased February, 1885	376,306.01
Stocks decreased January, 1885	179,780.27
Stocks decreased December, 1884	984,300 33
Stocks decreased November, 1884	266,552.87
Stocks decreased October, 1884	616,976 88
Stocks decreased September, 1884	345,281.52
Stocks increased August, 1884	97,092 86
Stocks increased July, 1884	323,063.12
Stocks increased June, 1884	194,320.03
Stocks increased May, 1884	322,981.73
Stocks increased April, 1884	1,945,919 83
Stocks increased March, 1884	164.711 39
Stocks increased February, 1884	206,984.61
Stocks increased January, 1884	119,365.56

	RECEIPTS.	DELIVERIES.
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,134
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,901	67,893
Daily average May	57,135	67,637
Daily average April	60,362	60,856
Daily average March	54,098	60,831
Daily average February,	54,976	67,667
Daily average January, 1885	53,290	58,188
Daily average December 1884	61,743	76,808
Daily average November	61,751	69,264
Daily average October	63 064	80,966
Daily average September	65,952	76,391
Daily average August	66,996	64,402
Daily average July	66,702	56,170
Daily average June	67,350	60,907
Daily average May	66,688	56,448
Daily average April	65,794	54,773
Daily average March	64,590	60,445
Daily average February	64,573	59,420
Daily average January, 1884	58,178	54,404

WASHINGTON COUNTY GEOLOGY.

THE FARLEY WELL RECORD.

Editors of Petroleum Age:

DEAR SIRS—I have received a copy of the PETROLEUM AGE for January, 1886, in which a record of the Farley well is published and accredited to me. While the record, as published, is substantially correct I do not wish to have it published as my record of the well without having the privilege of making some explanations.

In the first place the record as it stands [PETROLEUM AGE, Vol. IV., p. 1219] was not prepared for publication, but was condensed, for the use of Mr. Abram Wolf, the driller of the well, from a more detailed record.

I did not begin to receive specimens regularly until the well had been sunk to a depth of 744 feet, or 362 feet below the bottom of the Pittsburgh coal, and therefore do not care to vouch for the correctness of the record between those points.

From 744 feet to 1717 feet I received specimens from every "bit" and have preserved and examined them carefully. From this interval of 973 feet I have about 355 specimens which show nearly ninety distinct strata, or about twice as many as the condensed record shows. The specimens were carefully saved by the drillers for me and I am confident that the record, as far as it goes, gives as correct an account of the strata passed through as can be obtained under such conditions as are imposed in the ordinary drilling of a well. The set of specimens owes much of its scientific value to the faithfulness and enthusiasm which Mr. Charles Parker, one of the employees at the well, displayed.

With regard to the interval of 362 feet between the Pittsburgh coal and the flaggy sandstone ("Fine grained sandstone 17 feet to 761" of the published record) I presume that the record is, in a general way, true: although when compared with that of the Wilson well there seems to be a greater difference than should exist, especially in view of their agreement below this point.

The stratum marked in the published record "White quartz sandstone, calcareous, 56 feet to 1563," is the most characteristic rock of the series below the Pittsburgh coal. It should be entered in the record as a siliceous limestone. A very good description of the superficial appearance of this rock will be found in Dr. J. J Stevenson's Report of the Ligonier Valley [Second Geolog. Survey of Pa., K K K, p. 52]. A microscopic examination of pieces of this rock from the wells of this vicinity and of specimens of the siliceous limestone from Bolivar, Westmoreland county, Pa., shows the two rocks to be counterparts of each other. The arguments to show that these rocks are the same geologically would be out of place in this communication. This rock, which is being minutely studied by Prof. Linn, of the W. & J. College, consists of both rounded and angular quartz grains, together with rounded calcareous grains in a cement of carbonate of lime. The name "Lime-sand" given to it by Prof. J. P. Lesley is a term that ought to be retained as most nearly descriptive of the rock. The drillers usually call it a fine white sand and find it hard drilling. The grains of quartz cut the tools as rapidly as though the rock was a pure siliceous sandstone, while the setting of lime imparts a peculiar toughness which makes the rock a very characteristic one and drilling in it very tedious. In the 56 feet of this rock at the Farley well there were 52 bits run, or an average of but little more than one foot to the bit. The limestone which marks the upper part of this interesting

formation is found in the wells of this locality about 1100 feet below the Pittsburgh coal, while it and the siliceous limestone together have an average thickness of 80 feet. The latter is therefore from 730 to 750 feet above the first (Gantz) sand and in the neighborhood of 1000 feet above the third (Gordon) sand of the Washington group, which probably represents the Venango group: or, in round numbers, the siliceous limestone is a little more than half way from the Pittsburgh coal to the third sand. It therefore becomes a valuable horizon for the driller to note.

In this connection it may be of use to some of your readers to call attention to the depth of the Pittsburgh coal south and east of the borough of Washington. The depth of the Pittsburgh coal at the Wilson well—from which a very complete set of specimens was obtained from the surface to the depth of 1810 feet, when unfortunately the well was abandoned—was found to be 490 feet, or 145 feet lower than it is in the Gantz well about one-half mile to the north. In the absence of exact measurements I would estimate the height of the Wilson well to be 75 feet above the Gantz, which shows a dip of 70 feet from the latter to the former. It did not need these wells, however, to prove this southeast dip of the rocks in the borough, as it is easily made out from exposures of surface rocks in the quarries and railroad cuts of the vicinity. The rocks in this immediate vicinity in fact dip to the southeast until about two miles east of the centre of the borough, when the synclinal which lies just east of the Washington anticlinal, known as the Nineveh synclinal [Second Geolog. Survey Report. K, p. 30] is reached. A little over a mile east of town, at the west end of the tunnel on the B. & O. R. R., is a limestone [Upper Washington Limestone] which is at that point not far from 600 feet above the Pittsburgh coal. The wells which are starting in that direction, even when they begin on the lowest ground, will have to do nearly 500 feet of drilling and in some cases more than that before the Pittsburgh coal is reached. The wells to the east of town will therefore have at least 2500 feet of drilling to do before reaching the horizon of the Gordon sand. Indeed, there are points within two miles of Washington where 800 feet of rock overlie the Pittsburgh coal. EDWIN LINTON.

WASHINGTON AND JEFFERSON COLLEGE, Feb. 12, 1886.

Suggestions for Natural Gas Companies.

Hon. S. P. Johnson, of Warren, has addressed a few pertinent suggestions to the Pennsylvania Gas Company, which are reproduced below. They apply very forcibly to the Bradford Gas Company, which has long enjoyed the unchallenged privilege of taxing the citizens of this place exorbitant rates for the use of nature's most convenient fuel:

WARREN, Jan. 28, 1886.

To Frank Henry, C. N. Payne and J. P. Jefferson:

GENTS—I am in receipt of your circular and accept your invitation to reply. The distribution of gas and the prices heretofore charged instead of indicating to the consumers "a desire of the company to establish uniform and equitable rates for the use of gas for fuel," has been only successful in creating a universal impression that the interests of the stockholders was the only consideration influential in the adjustment of the tariff of charges. In this the inequalities and exorbitant rates charged, justly or unjustly, have produced a general feeling of dissatisfaction, based upon the conviction that it is an attempt of aggregate wealth and power to take advantage of their necessities and extort from the people the last dollar they were willing to pay for an article both a necessity and luxury. This conviction has produced its natural fruit—antagonism and retaliation. It ought not to be expected that independent men of this community would suffer themselves to be thus imposed upon by the greed of an irresponsible corporation without resentment and remedy, if remedy was attainable. You ask for suggestions and information from your customers, of whom I am one:

1. My first suggestion is that your company, with or without a soul or conscience, adopt the golden rule: "do unto your neighbors and kinsmen as you would have them do unto you."

2. Reduce your rates to what will yield the company a fair, full, but not unreasonable profit.

3. Adopt a general rate of charges upon the principles of humanity and justice, and then appoint one of your number to co-operate with one selected by the people to represent the citizens of the borough, whose duty it shall be to assess the tax upon each consumer, according to the circumstances of each case.

4. Furnish and put in meters as soon as possible, by which exact justice can be done to both producer and consumer.

5. In order to avoid misapprehension in the public mind that may do you injustice, I recommend that you publish annually or oftener an audited statement of the receipts and expenditures of the company. By adopting these or similar rules of action you will acquire the reputation of public benefactors, instead of tyrannical oppressors. Very respectfully yours,

S. P. JOHNSON.

The Associated Producers' Company.

The annual meeting of the Associated Producers' Company was held in Bradford on the 26th of January and the following officers were elected for the year: President and Manager, G. V. Forman; Vice President, J. J. Satterfield; Secretary and Treasurer, W. H. Johnson; Directors—J. J. Vandergrift, H. L. Taylor, George V. Forman, J. J. Satterfield, J. T. Jones, Henry Fisher, W. H. Johnson, D. O'Day and W. J. Young. The following statement, showing the condition of the company's affairs at the close of 1885, was presented:

Cash on hand January 1, 1885		$ 24,135
Total receipts		645,656
		$669,791
DISBURSEMENTS.		
New properties, expenses, etc	$123,051	
Construction	198,542	
Bills payable	335,839	
Cash on hand December 31, 1885	12,365	
		$669,791
Amount of oil produced, barrels		566,448
Number of wells		84½
Number of acres of land		1,863
Wells drilled and purchased in 1885		53½

This company was organized in 1884 and is composed of some of the leading men of the oil region. It was a direct outgrowth of the shut down movement that was inaugurated in July, 1884, and continued until January, 1885. The nominal capital of the company is $1,000,000, divided into shares of $10 each. At the ourset it was a co-operative enterprise, to which all producers were free to subscribe, but the larger operators soon secured all the stock. It is now controlled by men who have made large fortunes in oil and are recognized as the leading and influential business men of the region. Its success, as shown by the above figures, has been due to the business ability and practical experience of its Board of Managers.

JANUARY OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN JANUARY, 1886.

Allegany Field.

Twp.	Owner.	Barrels.
Seio, 1,	(Neff) Piekering & Smith	5
Alma,	3, Weeter & Baldwin No 4	4
"	8, (McCariston) Allen, Sternberg & Vine No 3	4
"	12, (Dugan) Dan Kane & Co No 1	dry
"	19, (Allen farm) Duke & Norton Oil Co No 56	6
"	19, (Allen farm) Duke & Norton Oil Co No 58	5
"	86, Brown & Thornton No 1	5
"	87, Shirley & Hochstett r No 3	3
"	100, Mosier & Reddy No 2	3
Wirt,	1, Applebee Bros No 9	7
"	10, " " No 10	10
"	33, Wellman, Miner & Fuller	6
"	48, Wirt Petroleum Co No 3	6
"	48, " " No 4	3
"	48, (Church) Allegany Oil Co No 1	8
"	51, (W Jordan) Lester, Jordan & Co No 1	gas
"	61, (Isaiah Jordan) Lester, Jordan & Co No 6	5
"	52, (Shaw) E T Johnson No 5	5
"	52, (Jacob Jordan) Barton, Ackerly & Smith No 5	8
"	52, Wilson Bros & Ackerly No 9	8
"	52, (M Jordan) Surprise Oil Co No 1	5
"	59, (Labar) Reynolds & Co No 1	15
"	61, (Deyoe) Anderson & Bradley No 1	gas
"	61, (Peterson) Limekiln Club No 1	3
"	—, (Snyder) Scott, Howard & Co No 1	2
Bolivar, 7,	Coast Oil Co No 40	5
"	23, Irwin & Morgan No 6	8
"	24, F C Streeter & Co No 11	6
"	24, Riley Allen No 8	6
"	31, A H Coffin No 11	6
"	63, Northrup & Co No 16	6
Genesee, 7,	Elsesser & Barmore No 4	4
"	8, I Willetts No 57	8
"	24, Emery Oil Co No 8	5
Clarksville, 3,	(Millis) Chas Phillips No 1	5
"	3, (S Bartow) National Transit Co No 64	gas
"	6, (Seever) Ackerly, Barton & Co No 13	7
"	10, Angell Oil Co No 11	8
"	10, (Crandall) Davidson & Madison No 7	8
"	10, Whipple & Davis	8
"	20, (Ernhout) Ackerly & Sammel No 10	8
"	20, (Zimmerman) Clarksville Oil Co No 10	6
"	20, (McDougal) Lord & Whitnall No 4	8
Steuben County	(Howard Twp) VanCampen, Lovell & Co	dry

Wells completed 44
Production 238
Dry 5

Bradford Field.

Newell, J T Jones No 26		10
" " No 27		10
Pike, " No 13		10
Drake, Melvin, Kennedy & Drake No 16		6
Niever, R Jennings & Son No 1		8
Bingham lot 152, Forest Oil Co No 15		8
Stinson, Connelly Bros No 3		8
B O Co, Western Oil Co No 6		15
Mack, F E Boden		dry
Larkin, S G Elliott No 1		6
Blair, Thos McDonald No 1		5
Colegrove, Pat Newell No 2		4
Lafferty, Van Vleck & Gifford No 44		5
" " " No 46		10
Storms, Suhr & Schopperle No 13		5
Turner, Perry Timblin No 6		6
E T Co, Forest Oil Co No 31		5
Van Vleck, H M Miles No 18		8
Hamlin, J B Daniels & Co No 20		8
Bingham, Waugh & Co No 16		6
Grow, G N Grow No 1		3
Smith, Peterson & Buckley No 1		5
Youngs, Eldred Gas Co		gas
E T Co, H Schanlis No 3		5
Cronan, Dr Baker No 4		5
C B & H, Page, Walker & Co No 6		8
" R Y Mitchell No 13		7
" Watson Oil Co No 42		6
" Fitzgibbons & Evans No 6		5
" John McGillis No 6		7
C B & H, Bird & Lincoln No 13		8
Willetts, Howe Bros No 13		10
Bell's Camp, Hughes & Co		8
Burlingame, Union Oil Co No 7		10
Hamlin, E R Sherman No 6		8
Barse, R Jennings & Son No 8		10
" Union Oil Co No 38		10
Bingham lot 495, Union Oil Co No 3		15
" 496, " " No 2		15
" 391, C W Scofield No 50		10
" 176, McCalmont Oil Co No 20		10
" 540, T J Melvin No 13		10
Warrant 3076, Union Oil Co No 62		15
Port Allegany (Eastwood) Wolfe & Wilcox		dry

Wells completed 44
Production 333
Dry 3

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Marsh, Collins & Morse No 5	6
Marsh, Collins & McCalmont Oil Co No 1	dry
Rollins, Collins & Morse No 1	30
Morrison heirs, Anchor Oil Co No 7	20
3729, Pickett & Stone	dry

Warren, etc.

Wardwell, Benedict & Rockwell No 30	10
" " " No 31	10
Hertzell, Barnsdall Bros & Sill	2
Hall, Jos Hall	dry

Wells completed 9
Production 78
Dry 3

Clarendon.

80, J E Tucker No 9	6
105, Sam Tait Jr No 2	6
105, R I Shugert No 12	5
106, S M Ross & Co No 3	6
107, W B Roberts & Son No 15	6
108, Hackett & Shirley No 6	6
463, O'Donnell & Law No 1	8
466, J Smith & Son	5
496, O W Beatty & Bro No 14	6
496, Pat Connors No 2	4
496, Fred Hue No 13	5
499, Munro & Finnegan No 10	5
499, Capt Adams No 7	5
526, E O Emerson No 11	8
527, F H Rockwell & Co No 20	5
530, Goal Bros No 5	5
531, Alfred Short & Co No 5	5
566, Miller & Co	dry
582, H G Lapham No 9	6

Wells completed 19
Production 102
Dry 1

Tiona.

81, Jenkins & Co No 2	6
83, Booth Bros No 3	dry
75, Fertig, McKinney & Co No 2	5
83, " No 8	6
83, " No 9	5
103, (lot 17) " No 4	6
103, " " No 5	7
103, " " No 10	6
161, Helm & Mealey No 4	6
164, Howe, Work & Moore No 4	6
165, McKelvy & Best No 13	6
200, Bovee & Duck No 7	5
201, Maxwell Oil Co No 10	6
201, Short & Dunham No 4	6
201, L H Best No 8	6
201, Wesley Chambers No 4	6
202, E O Emerson No 4	dry
203, Booth Bros No 4	3
205, J R Kuhn & Co No 3	6
205, H B Beatty & Co No 18	6
240, Pickett & Farnsworth No 3	8
240, F W Winger No 3	6
240, " " No 4	5
240, Cochran Bros No 6	5
241, L Kraeer & Co No 18	6
243, Cochran Bros No 3	4
244, Horton, Crary & Co No 7	5
281, " No 2	6
281, (Ford) L Kraeer & Co No 5	6
284, Watson & Mitchell No 4	6
284, Hackett & Shirley No 2	6

Wells completed 31
Production 166
Dry 2

Cooper District.

3 9, J M Clapp No 5	15
408, E Barnes & Co	dry
E T Co, Fertig & McKinney No 2	8

Wells completed 3
Production 23
Dry 1

Balltown.

3195, (Crissman) N F Clark No 11	40
3195, " " No 12	40
3198, Haight, Agnew & Co No 5	5
4791, R R Armor No 2	dry
4792, Grandman Brothers No 20	15
5215, May, Kelley & Grandin No 40	30
5215, " No 41	30
5215, " No 42	20

Wells completed 8
Production 180
Dry 1

Kane.

424, Tennent, Howe & Co	gas
426, Kane Oil Co No 1	120
3767, Craig & Cappeau No 2	50
3767, C & C and A P Co No 1	50
3782, Chapman & Filkins	dry
3782, Associated Producers Co	dry
3778, M Murphy	dry

Wells completed 7
Production 220
Dry 4

Miscellaneous.

Shamburg, (Hickory farm) Dr Shamburg No 14	5
Forest, 2824, Alshouse & Co	dry

Grand Valley.

Carpenter, L B Wood & Co No 3	5
Drake Pet Co, Keper & Tarbell No 6	8
Milo Emerson, W W Hague No 2	6
East Branch, W Benedict & Co	2

Wells completed 6
Production 26
Dry 1

Lower Country.

Venango and Other Sections.

Farm.	Operator.	Barrels.
Diamond,	Darr & Manning No 9	2
Ed Tarr,	Kulp & Co	5
Watson,	Kerr's Mills, Emery & Stewart	dry
Columbia,	Columbia Oil Co No 163	10
A Stewart,	M B McManus	dry
W & K,	Wolf & Kugler No 8	3
Pleasantville,	Emery & Skinner No 1	6
Mackey,	Roberts & Co	2
Shaw,	J Williamson	dry
Moody Run,	Thomas Smith	dry
Karns,	Cornwall & Hassan	dry
Button,	J B Smithman	6

Bullion.

Hovis, Gilbert & Co	5
Cross, McFadden & Co	dry

Vicinity Emlenton.

Paul Neely, Nelson & Co	gas
Beals, Patforf & Young	dry
Johnson, Knight & Shed	dry
Cross, Robinson & Leonard	dry
Hunter, Rowley & Co	dry
Ritchie, Chas Ritchie	dry
McCullagh, Shaffer & Messer	5
Sloan, Bailey & Walzabenstein	10
Scott Jameson, Frever	5
Six Points (Thompson) Sherwood & Galbraith	dry

Rockland.

John Hetzler, Dale Bros No 5	30
J Jolly, " No 6	20
R Porter, Flynn, Klinger & Co No 5	8
" Goodrich & Salisbury No 2	50
D B Hetzler, Crawford & Co	dry
J Jolly, Fisher Oil Co No 3	6
Parson, Jamieson & Furniss No 3	10
Wickes, W H H Piper No 4	30
" " No 5	50
J Hetzler, Morgan & Fox No 3	50
J Jolly, Leckey & Foster No 2	20
Batten, C C Bowen	dry
D Porter, Koch Bros & Riter	40
D Johnson, Connors & Fishell	gas
Showers, Hulings Bros	15
" Heydrick & Putnam	dry
J Hetzler, Heydrick, Hite & Co	15

Wells completed 41
Production 403
Dry 17

Clarion.

Gibbs, Ashland Oil Co	5
Berlin, Patterson, Leedom & Hayes	3
Heeter, Berringer & Graham	10
W L Hess, Chauncey Oil Co No 4	25
" S P Morrison No 3	40
" Hess Bros No 4	30
" W L Hess No 1	3
Beals, Shippen, Woodburn & Co	est. 10
Edmunds' Heirs, Urquhart & Lavens	20
Black, Hess & Sackett No 10	30
" " No 11	est. 35

Sowers, Hite & Walters No 5 20
" " No 6 .....est. 10
H J Smith, Shaffer & Sheasley No 2 5
Baum, Berlin & Co No 7 10
Kinnemuth, Chauncey Oil Co No 10 15
School House lot, Frampton Oil Co 15
Widow Deitrich, Wolf & Bell No 4 ...est. 5
" (Seibert lease) Wolf & Bell No 2 10
John Herrmann, Wolf & Bell No 3 20
Herrmann, Phipps & Martin No 3 20
Widow Deitrich, Staley, McDonell & Wolf No 7 50
Widow Deitrich, Staley, McDonell & No 8 20
Widow Deitrich, J M Deitrich No 4 15
Schreffler, Darr & Co No 3 50
" Hall & Co 10
A Mong, E E Chambers No 2 2
Deitrich, Operators' Oil Co No 2 15
Sheets, Jacob Haun 15
Cooksburg, Cook & Co .....dry
Scotch Hill, Wolf & Kugler .....dry
Fox Estate, Fox & Fink No 27 6

Wells completed 32
Production 527
Dry 2

Butler and Armstrong.

McCrea, Hunter & Cummings No 3 40
" " No 4 15
Jos Wright, Phillips Bros .....est. 10
A L Shrader, " .....dry
Rowe, Allegheny Oil Co .....dry
Humes, (Reatt farm) Hunter & Cumm'gs 2
Mrs Ort, Westerman & Co No 4 50
T Nolan, Brown, Hovis & Co .....dry
St Joe, (Martin farm) Showalter Bros ... 10

Martinsburg.

Cannon, Edwards & Co No 4 .....dry
Turner, W J McKee No 5 20
" " No 6 10
Alex Story, M P Black No 1 .....est. 10

Thorn Creek.

Mangell, Shulters & Co 20
McLaughlin, Clark, Reep & Sutton No 4 30
Kennedy, Clark & Snee .....est. 15

Wells completed 16
Production 232
Dry 4

Washington.

Smith, Belmont Oil Co 350
Gordon, P L & H Co No 2 .....est. 60

Wells completed 2
Production 410

Miscellaneous.

Rochester, (Taylor farm) Beaver county, Gailey Bros No 4 25
Rochester, Trumpeter, Gailey Bros No 1 20
Economite, Economites ..... gas

Wells completed 3
Production 45
Dry 1

DRILLING WELLS,

RIGS UP AND BUILDING JANUARY 31, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
2,	Pennell & Co No 3	sand
2,	Co st Oil Co No 38	200
3,	Coyle & Simon No 2 (old)	rig
4,	Mackin & Breckenridge No 13	sand
4,	" No 14	rig bldg
11,	(Norton) Duke & Norton Oil Co No 62	50
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
47,	(Church) Union Oil Co No 8 (fishing)	1200
50,	" No 9 (old)	rig
51,	Duke & Norton Oil Co No 60	1000

New rigs 1
Old rigs 4
Drilling 6

Total 11

Alma.

2,	H L McMullan No 14	drilling
3,	Triangle Oil Co No 19	drilling
19,	(Allen farm) Duke & Norton Oil Co No 57	50
20,	(Crandall) W F Coast No 15	rig
23,	Vance & Horton (old)	3 rigs
24,	New Milford Oil Co (old)	2 rigs
24,	W F Jones (old)	rig
26,	Willetts & Elliott (old)	rig
28,	F N Whiteomb No 2	rig
37,	Perrin & Young No 12	drilling
51,	Sawyer & Co (old)	rig
78,	Torry & Pirden No 3 (old)	rig
86,	Brown & Thornton No 2	200
86,	" No 3	rig bldg
88,	Duke & Co (old)	rig
86,	Shirley & Hochstetter No 9	700
107,	" No 9	rig bldg
120,	McCalmont Oil Co No 9	sand
120,	" No 10 (old)	rig
140,	Willetts, Duke & Rauber No 11	drilling
140,	" No 12	rig bldg
142,	Dean & Smith No 5 (old)	rig
26,	(South Alma) Miles & Wyvell	rig

New rigs 6
Old rigs 12
Drilling 8

Total 26

Wirt.

1,	Riley Allen) Emp Gas & Fuel Co Limited No 2	rig
1,	Appelbee Bros No 11	rig
2,	(Sherwood) Frank Fox No 3	rig
33,	(Pierce) Stewart Bros No 5	sand
33,	(Bliss) E S Bliss No 10	600
34,	(Drum) J B & E C Bradley No 3	rig
43,	(Finch) G C Knox & Co No 3	200
48,	(Hicks) Chas Phillips No 3	400
48,	" " No 4	rig
48,	" " No 5	rig bldg
48,	Wirt Petroleum Co No 5	rig
48,	Church (Allegany Oil Co No 2	rig
48,	Love & Co No 2	600
48,	" No 3	rig bldg
52,	Johnson & Wilson No 6	sand
52,	(J W Jordan) Luce & Hembert No 2	1000
52,	(Jacob Jordan) Barton, Ackerly & Smith No 6	rig
52,	" " No 7	rig bldg
52,	(Milton Jordan) Surprise Oil Co No 2	50
53,	(Burdick) Barton, Hammond & O'Neill No 1	rig
—,	(John Jordan) P M Shannon & Co No 1	drilling
55,	(Voorhees) " No 1	drilling
59,	(Labar) Reynolds & Co No 2	rig bldg
59,	" " No 3	rig bldg
59,	C L Howard No 1	rig
59,	Fritz & McKivy	rig bldg
59,	Chandler & Co No 1	rig
59,	(Carnahan) National Transit Co No 67	rig
61,	(Deyoe) " No 66	50
60,	(Alvah Jordan) J H Snow No 4	sand
60,	" " No 5	rig
60,	" " No 6	rig bldg
60,	" Lester, Jordan & Co No 2	rig bldg
61,	(Isaiah Jordan, " No 7	rig bldg

New rigs 22
Old rigs 0
Drilling 12

Total 34

Bolivar.

7,	Coast Oil Co No 37	rig
12,	Wood & Co	rig
15,	(Sawyer) Smith & Sawyer No 20	drilling
23,	Irwin & Morgan No 7	drilling
23	" No 8	rig bldg
23,	F C Streeter & Co No 12	drilling
23,	John Fay, No —	rig
24,	Riley Allen No 9	rig
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig
31,	Smith & Co No 10 (old)	rig
37,	Kilbury & Co	rig

New rigs 6
Old rigs 3
Drilling 3

Total 12

Genesee.

7,	Elsessor & Barnore No	rig bldg
11,	(Little Genesee) Emp Gas & Fuel Co Limite (for gas)	rig
14,	Merwin (old)	rig
22,	I Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
22,	" No 19 (old)	rig
23,	Hughes & Coughlin (old)	rig
24,	Emery Oil Co No 9	50
24,	" No 10	rig
29,	William Cranston (old)	rig
38,	S E Young (old)	rig

New rigs 3
Old rigs 10
Drilling 1

Total 14

Clarksville.

2,	(Smith) John Hatch No 1	250
3,	(Millis) Chas Phillips No 2	rig bldg
3,	(Alvah Jordan) A B Cottrell No 2	200
3,	" " No 3	rig bldg
3,	(M Jordan) M Jordan	rig bldg
5,	(Wetherby) Harris, Johnson & Co No 1	300
6,	(Seever) Ackerly, Barton & Co No 9 (old)	rig
6,	(Wetherby) " No 14	rig
11,	(Congdon) " No 15	rig bldg
9,	Heuston & Brecht No 4 (old)	rig
9,	Merritt (old)	rig
10,	Angell Oil Co No 15	rig
10,	" No 16	rig
10,	S W McKelvy No 1	sand
10,	Whipple & Davis	rig
14,	(Lane) Jas O'Neill No 1	sand
14,	" Ackerly & Sammel No 1	sand
14,	" Barton, Ackerly & Co No	rig bldg
14,	" " No	rig bldg
—,	(Swartwout) " No	rig bldg
20	(Ernhout) " No 6 (old)	rig
20,	" " No 9 (old)	rig
20,	" " No 23 (old)	rig
20,	(McDougal) Clarksville Oil Co No 11	drilling
20,	" Mack Oil Co No 6	rig bldg
28,	(Butts) Love, Patterson & Co No 12	drilling
28,	" " No 13	rig
28,	" " No 14	rig
28,	" M Finnegan No 6	rig bldg

New rigs 15
Old rigs 6
Drilling 8

Total 29

Miscellaneous.

1,	North Div Seio (McQueen) Middaugh & Co	drilling
	Amity Twp, (McGibony) Baker & Co	rig
	Potter County, (Clark) W Duke Co	rig
	" (Coudersport) Watson & Co	drilling
	Steuben County, N Y, VanCampen, Lovell & Co No 2	rig bldg
	Near Gaines, Tioga County, Pa, Elmira Company	rig bldg

New rigs 4
Old rigs 0
Drilling 2

Total 6

Bradford Field.

East and West Branches.

Dent, Whitney & Wheeler No 40 (old)	rig
Drake, J T Jones No 27	rig
Cary, W H Duncan No 4 (old)	rig
Moody, Emery Oil Co No 107	1200
" " No 108	50
Warrant 2268, R J Straight No 17 (fishing)	60
Warrant 2268, R J Straight No 18	rig bldg
Bingham, lot 197, " No 7	sand
" lot 154, Union Oil Co No 19	800
Watrous, A K Darrow	drilling
Pomeroy, Wheatland Oil Co	drilling
Kissam, Richards & Blakely No 8	drilling
Tomes, Kincaid & Harper No 3	sand
" Leboeuf & Co No 1	rig
B O Co, Western Oil Co No 4 (old)	rig
Mack, Columbia Oil Co (old)	rig
" Fisher Oil Co No 19 (old)	rig
" F E Boden	drilling
Emery A Mayer & Co	drilling
Hatfield, Wesley Chambers (old)	rig
D Walb, H O Robbins & Co No 1	rig
Brown, James B Fox No 3	100
Wagner, C K Book No 1	drilling
" " No 2	rig bldg
" S G Elliott No 2	drilling
Colegrove, Pat Newell No 3	drilling
Whitney Imp lot 2, P C L & P Co (old)	rig
Taylor Tract, Ent Transit Co No 39	100
Hinchey, McMurray Bros No 6 (old)	rig
Paton, McClure & Co (old)	rig
Clark, McCray Bros (old)	rig
Willis, do (producing)	550
Clark, Hanna & Clark No 31	rig
Cockroft, Jas E Coehran No 1	drilling

Quintuple.

25, C W Scofield (old)	rig
44, J W Humphrey (old)	rig
77, Etna Oil Co No 2	200
106, Smith Seamen & Co No 3	200
107, J S Wilson No 3	rig

—, Camp & Zane No 13 (old) ..... rig
220, Clark, Stearns & Co (old) ..... rig
260, E T Howes (old) ..... rig

New rigs 7
Old rigs and shut down 16
Drilling 19
Total 42

Kendall Creek.

Lafferty, Van Vleck & Gifford No 45 100
" " No 47 100
Brennan, A W Boyd ..... drilling
Turner, Perry Timblin No 7 ..... rig
Farr, Hazelwood Oil Co No 7 1300
Fisher, Larrabee & Whedon No 9 (old) ..... rig

New rigs 1
Old rigs 1
Drilling 4
Total 6

Knapp's Creek.

Baum, R Jennings & Son No 11 1200
White, Mitchell & Jones No 81 (old) ..... rig
Matthews, C B Whitehead No 6 ..... rig
Borden, Martin & Co 500
" John Looker ..... rig
Lovell, Hazelwood Oil Co No 16 (old) ..... rig
Duke, J West No 7 (old) ..... rig
" " No 8 (old) ..... rig
Scio lands, Buchanan, Randall & Co (old) ..... rig
Dennis, Shear & Nolan No 1 ..... rig
Irons, P V Carter No 3 ..... drilling
Sanderson, Tarbell & Shaver ..... sand
Rixford, Elder, Bennett & Co ..... drilling
Hamlin, J B Daniels & Co No 21 ..... drilling
Keating, Forest Oil Co No 51 1000
" " No 52 ..... rig bldg

New rigs 4
Old rigs 5
Drilling 7
Total 16

Foster Brook.

E T Co, Kervin & Co No 4 800
" " No 5 500
" " No 6 ..... rig bldg
" " No 7 ..... rig bldg
" Coleman, Penny & Boyne No 12 (old) ..... rig
" Post & Blackmarr No 15 1600
C B & H, Page, Walker & Co No 7 400
" " No 8 ..... drilling
" " No 9 ..... rig bldg
" Juter & Yager (old) ..... rig
" M Mandeville No 7 ..... rig
" J S Patterson No 11 ..... drilling
" Jno McGillis No 7 ..... rig
" Johnson & Co No 7 ..... drilling
" lot 61, Fitzgibbons & Evans No 1 50
Willets, Howe Bros No 12 200
Foster, Tucker, Rolfe & Burns No 13 ..... drilling
Wilcox, Allen ..... drilling
Borden, Meachem & Fisher No 8 ..... rig

New rigs 6
Old rigs 2
Drilling 11
Total 19

Four Mile.

Van Campen, Wm M Brown (old) ..... rig
" Barnsdall & Stearns No 10 600
Waters, Griffin & Howard No 2 (old) ..... rig
Fries, Franchot Bros No 10 ..... rig
Zaph, " No 8 600
" " No 9 ..... rig
Dye, Manhattan Oil Co No 5 (old) ..... rig
Stevens, Wm Stevens ..... drilling
" Book & Rhodes No 9 100
" " No 10 ..... rig bldg

New rigs 3
Old rigs 3
Drilling 4
Total 10

Indian Creek.

North Branch, J D Downing & Co (old) ..... 2 rigs
Morse, Morse & Brown (old) ..... rig
Hamlin, Miller & Odell No 4 (old) ..... rig
" Forest Oil Co No 38 800
" " No 39 ..... rig bldg
Barse, Henry Jennings No 4 ..... drilling
Weston, J L McKinney & Co No 6 ..... rig
" Ernst & Perrin No 2 ..... drilling
Dodge, Kemp & Patterson No 7 ..... rig
" McGilway Bros & Co No 3 ..... drilling
Wright & Sawyer, L H Ballard No 3 ..... sand
" " No 4 ..... rig
G & A, Gallagher Bros No 13 ..... rig bldg
Keyes, D J Keyes No 5 ..... sand

New rigs 5
Old rigs 4
Drilling 6
Total 15

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) ..... rig
" 2263, " No 7 (old) ..... rig
Bingham, lot 499, " No 7 ..... sand
" lot 539, " No 44 ..... sand
" lot 539, " No 45 ..... rig
" lot 5 8, C P Byron No 8 600
" lot 538, " No 9 ..... rig
" lot 69, Bennett & Thompson No 11 ..... rig
" lot 540, T J Melvin No 14 500
" lot 592, " No 10 1000
" lot 589, Asso'd Prod Co No 56 ..... sand
" lot 576, Rose & McLeod No 3 50
" lot 577, " No 6 ..... rig bldg
" lot 477, Tucker & Rolfe No 3 (old) ..... rig
" lot 541, Jack, Brawley & Co No 1 500
" lot 497, Jack, Brawley & Co No 2 300
" lot 497, Jack, Brawley & Co No 3 ..... rig bldg
" lot 391, C W Scofield No 51 ..... rig bldg

New rigs 6
Old rigs 3
Drilling 9
Total 18

Kinzua.

Warrant 2243, Emery Oil Co No 45 ..... sand
" 2243, " No 46 50
" 2243, " No 47 ..... rig
Niles Tract, Chapin & Co 1400

New rigs 1
Old rigs 0
Drilling 3
Total 4

Miscellaneous.

Near Allegany, C C Conroy & Co ..... sand
Bascom, (Olean) W H Curtis & Co ..... rig bldg
Blakeslee, H Blakeslee ..... sand
Warrant 3669, sub 137 P F Kearns ..... drilling
" 4907, Royal Oil Co No 1 100

New rigs 1
Old rigs 0
Drilling 4
Total 5

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Marsh, Collins & Phillips No 6 ..... sand
" " No 7 ..... rig
Marsh, Collins & Morse No 6 ..... sand
Swift, VanScoy, Collins & Co No 1 150
" " " No 2 ..... rig
Marsh, J W Paxton No 3 ..... rig bldg
English Graveyard Oil Co ..... rig
Wm Harris, Wm Fogel & Co No 8 (old) ..... rig
Morrison Heirs, Anchor Oil Co No 8 200
" " No 9 ..... rig bldg
S S Harris, Dr VanScoy ..... rig bldg

Warren Etc.

Wardwell, Benedict & Rockwell, No 32 ..... drilling
" " No 33 ..... rig
" Island, McKelvy & Co 200
" J C Palmer & Co No 5 ..... rig
2921, (Mead) C C Muffield ..... sand
Big Bend, Hill & Powell ..... drilling
Wilhe, Beatty & Pickett ..... rig
North Warren, (Lessler) Lessler & Co 300
" Island, Rhumor & Co ..... rig
" Kidder, C A Martin & Co ..... rig
Sweden, J A Magee ..... drilling

New rigs 11
Old rigs 1
Drilling 10
Total 22

Clarendon.

54, O W Beatty & Bro No 39 ..... sand
54, " No 40 ..... rig
78, " (old) ..... 2 rigs
496, " No 15 100
496, " No 16 ..... rig bldg
495, Wm Pagett No 6 ..... rig
495, " No 7 ..... rig
464, Wm O'Neil No 2 200
464, Columbia Oil Co No 20 ..... rig
464, Lockwood & Parson No 16 ..... rig
464, Branch & George No 3 ..... rig
463, O'Donnell, Thompson & Co No 2 100
463, J B McElwaine No 4 (fishing) ..... sand
463, " No 5 800
463, " No 6 ..... rig bldg
466, J Smith & Son ..... rig
80, J E Tucker No 10 ..... rig bldg
80, Johnson Irvine No 5 900
80, " No 6 ..... rig
80, " No 7 ..... rig
105, Sam Tait Jr No 3 ..... drilling
105, " No 4 ..... rig
106, S M Ross & Co No 4 100
108, Hackett & Shirley No 7 100
108, " No 8 ..... rig bldg
108, J Niel (old) ..... rig
162, J A Dower No 6 ..... rig
495, Ulman, Steck & Co No 2 100
497, Union Oil Co No 3 100
526, Keatley Bros No 13 ..... drilling
526, E O Emerson No 12 600
526, " No 13 ..... rig bldg
527, F H Rockwell & Co No 21 100
530, Goal Bros, No 6 ..... drilling
531, Alfred Short & Co No 6 800
558, F S Tarbell No 2 ..... drilling
558, Goss, Goal & Haskell No 6 ..... sand
558, " " No 7 ..... rig
558, " " No 8 ..... rig bldg
558, Sam Tait Jr No 8 ..... sand

New rigs 18
Old rigs 3
Drilling 20
Total 41

Tiona.

81, Jenkins & Co No 3 100
83, Booth Bros No 4 ..... drilling
83, " No 5 ..... rig
59, Fertig, McKinney & Co (shut down) ..... sand
74, " No 6 ..... drilling
75, " No 3 ..... drilling
83, " No 11 ..... drilling
83, " No 12 ..... rig
83, " No 13 ..... rig
103, (lot 17) " No 11 ..... drilling
103, " " ..... drilling
103, (lot 15) " No 19 ..... rig
109, J W Sherman & Co No 8 500
111, Wheedon & Shearer 300
160, D Gardner No 7 600
161, O'Donnell & Tobias No 11 ..... sand
161, Helm & Mealey No 5 100
161, " No 6 ..... rig
165, McKelvy & Best No 14 ..... rig
200, Bovee & Duck No 8 100
201, Mandell Oil Co No 11 ..... drilling
202, " No 9 ..... rig
201, " No 12 ..... rig bldg
201, Wesley Chambers No 5 900
201, " No 6 ..... rig
202, E O Emerson No 5 ..... rig bldg
204, Wesley Chambers No 9 500
205, J R Kuhn & Co No 4 200
240, (Tidewater) E O Emerson No 8 600
240, Pickett & Farnsworth No 4 ..... rig
240, F W Winger No 5 ..... rig
241, L Kraeer & Co No 19 ..... drilling
241, " No 20 100
241, " No 21 ..... rig
244, Horton, Crary & Co No 2 (old) ..... rig
244, " No 8 ..... drilling
244, " No 9 ..... rig
281, " No 3 ..... rig
281, (Ford) L Kraeer & Co No 6 ..... rig
28 , Watson & Mitchell No 5 ..... rig
284, Hackett & Shirley No 3 ..... rig bldg
284, Anchor Oil Co No 1 300
284, Pickett & Stone No 1 ..... rig
284, " No 2 ..... rig bldg

New rigs 20
Old rigs and shut down 2
Drilling 22
Total 44

Cooper District.

369, J M Clapp No 6 ..... rig
401, Anchor Oil Co (shut down) 1200
407, Shunk & Stewart No 9 (old) ..... rig
407 " No 13 ..... rig
407, Cochran Bros No 10 (old) ..... rig
400, J A Magee ..... rig
408, McCalmont Oil Co No 26 1000
408, " No 27 ..... rig
E T Co, Fertig & McKinney No 3 ..... drilling

New rigs 4
Old rigs and shut down 3
Drilling 2
Total 9

Balltown.

3195, (Crisman) N F Clark No 13 ..... drilling
3195, " " No 14 ..... rig
3195, " " No 15 ..... rig bldg
3192, Steelsmith, Ross & Co No 2 300

4821, Balltown Oil Co No 28 ..... drilling
4821, " No 29 ..... drilling
4823, Dutch Oil Co No 5 ..... sand
5215, May, Kelley & Grandin No 43 ..... drilling
5215, " No 44 ..... drilling
5214, Jas Welsh & Co ..... rig
737, Miller & O'Dell ..... drilling

New rigs 3
Old rigs 0
Drilling 8

Total 11

Kane.

423, Kane & Clemenger (old) ..... rig
424, M Murphy 1000
424, Shirley & Hochstetter ..... sand
424, M K McMullin (old) ..... rig
424, M Murphy (old) ..... rig
425, Union Oil Co No 1 ..... rig
425, " No 2 ..... rig
3754, Union Oil Co ..... rig
3767, Roy, Archer & Clemenger 2000
3767, Craig & Cappeau No 3 1900
3767, " No 4 800
3767, " No 5 ..... rig
3767, A P Co & Craig & Cappeau No 2 1700
3782, Asso'd Prod Co (old) ..... rig
3773, Watson (old) ..... rig
3775 lot 0, Markham & Thyng 1700
3775 lot 11, Kane Oil Co No 1 2000
3775 lot 11, " No 2 2000
3775 lot 12, P F Kennedy 1300
3775 lot 13, " ..... sand
3775 lot 14, U A Andrews 1000
3775 lot 5, Thompson & Denman ..... rig
3775 lot 19, Simpson & McMullin ..... sand
3775 lot 20, Reid & Brown 1600
3775 lot 20, Bayne & Fuller 2000
3775 lot 21, Brennenan & Walker (old) ..... rig

New rigs 5
Old rigs 6
Drilling 15

Total 26

Miscellaneous.

Dawson Run (Tionesta) Roess Bros ..... rig
Shamburg, Dr Shamburg ..... drilling
McKean, 372, Calhoun ..... rig
Forest, 3190, Curll, Campbell & Co ..... rig
" 3561, Roberts & Windsor No 3 ..... sand
" 5503, Merck & Beatty 800
" 5644, F J Clemenger & Co 400
South West twp, Dunham & Benedict ..... drilling

Grand Valley.

Carpenter, L B Wood & Co No 4 ..... sand
J Campbell, L B Wood & Co ..... drilling
Blakeslee, Reed & Co 200
Drake Pet Co, Kepler & Turbell No 7 200
Proper, W W Hague No 3 (old) ..... rig
Mio Emerson, " No 3 ..... rig
East Branch, W W Benedict & Co ..... drilling
C H Ames, Daniels & Co 100
Emerson, G P Keeler No 6 ..... rig
Farrell, Nelson Farrell 100

New rigs 6
Old rigs 1
Drilling 12

Total 19

Lower Country.

Venango and Other Sections.

Biery, Graham & Co (old) ..... rig
McCalmont, S P McCalmont ..... sand
" " ..... rig
McCormick, Phinney & Co No 4 400
Young, John Lee & Co (old) ..... rig
Diamond, Darr & Manning No 10 ..... rig bldg
Benninghoff, Oil City Fuel Sply Co ..... sand
" " ..... rig
Chas Lake, Loots & Co ..... sand
Miller (Salem) Duncan & Co ..... drilling
Perry (St G Sitting) I M Sowers & Co ..... drilling
Rouseville, Jos McCandless ..... rig
" J Kirkwood ..... rig bldg
Columbia, Columbia Oil Co No 164 ..... rig
Brown, Anchor Oil Co (old) ..... rig
White, Stewart & Co No 97 ..... sand
Griffin, Pu tell (old) ..... rig
Pleasantville, Emery & Skinner No 2 ..... rig
K & G, Kugler & Gailey No 13 ..... rig bldg
Morrison, Fisher Oil Co No 3 ..... drilling
Gates, (Queen) " No 3 ..... drilling
Roe, " No 1 ..... drilling
Allison, " No 11 ..... rig
Osmer, Galbraith & Parker ..... rig
Melatt, Dr D C Galbraith ..... drilling

Tar Kill.

Webb, Taylor, Torrey & Murphy No 2 ..... sand
" " No 3 ..... sand
" " No 4 800
Fox, " No 1 ..... rig
A Hill, " No 2 ..... rig
" " No 3 ..... rig bldg
Baum, Baum ..... rig
Tarsill, Koch & Goettell ..... rig bldg
Dolan, S P McCalmont ..... rig

Bullion.

Baker, Hovis & Co ..... rig bldg

Vicinity Emlenton.

Eli Osman, N Mackin (old) ..... rig
D Russell, Baum & Co (old) ..... rig
Porterfield, A A Hopkins (old) ..... rig
J W Smith, Sheasley & Co No 5 ..... sand
Sheasley, Jacob Sheasley No 1 ..... rig
" " No 2 ..... rig bldg
Royal, Bennett & Gosser ..... rig bldg
Grant, Bennett & Allen No 4 200
Hayes, Wilson Bros ..... rig bldg
Dr Crawford, Wm Weaver ..... sand
Grant, J P Crawford & Son ..... rig
Leslie, Leslie & Anderson 200
King, Sam King ..... drilling
L Sloan, T Dutton No 4 200
" Sloan & Lawrence ..... rig bldg

Rockland.

D Porter, Dale Bros No 4 ..... rig
John Hetzler, Dale Bros No 6 ..... rig
" " No 7 ..... rig bldg
Black Heirs " No 2 200
J Jolly " No 7 ..... drilling
" " No 8 ..... rig
" " No 9 ..... rig bldg
R Porter, Goodrich & Salisbury No 3 ..... drilling
" " No 4 ..... rig
D Porter, " No 4 ..... rig
" " No 5 ..... rig bldg
R Porter, Flynn, Klinger & Co No 6 ..... sand
" " No 7 ..... rig bldg
J Jolly, Duncan & Lowentritt No 4 ..... drilling
Parson, Jamieson & Furniss No 4 200
J Hetzler, Boyd & Ritts No 2 ..... sand
Campbell, " No 1 ..... rig bldg
" Peanut and Banana Oil Co ..... rig bldg
Shafer, Heydrick, Hite & Co ..... rig bldg
Wicks, W H H Piper No 6 ..... sand
" " No 7 ..... rig
D B Hetzler, Rider & Simpson ..... drilling
Cox, Forest Oil Co No 2 ..... sand
J Jolly Morgan & Fox No 2 ..... rig
J Hetzler, " No 4 ..... rig
J Jolly, Leckey & Foster No 3 ..... drilling
D Porter, Koch Bros & Rider No 2 ..... sand
Black, Wilson & Smith No 2 ..... rig
Rogers & Gates, Heydrick & Co (old) ..... rig
Johnson, J H Heydrick ..... rig bldg
Showers, Morgan Bros ..... rig
Hetzler, Leckey & Foster ..... rig
Showers, Hulings Bros No 2 ..... rig bldg

New rigs 43
Old rigs 8
Drilling 32

Total 83

Clarion.

Cogley Run.

Gibbs, Ashland Oil Co ..... sand
Rickenbrode, " No 7 (old) ..... rig
Shippen, " No 3 100
Berlin, Patterson, Leedom & Hayes No 13 (old) ..... rig
" " No 14 ..... rig
John Deitrich, Lovell & Co No 8 500
" " No 9 ..... rig
" " No 10 ..... rig
" " No 12 800
Fisher, Staley, McDonell & Deitrich (old) ..... rig
John M Deitrich, Holt & Morrison No 5 700
Heeter, Berringer & Graham 100
W L Hess, Emleston Oil Co No 6 ..... rig
" Chauncey Oil Co No 5 100
" " No 6 ..... rig
" W L Hess No 2 ..... rig
Beals, Brown, Whitehill & Co (old) ..... rig
" Beals, Hunter & Co ..... rig bldg
" Unknown ..... rig bldg
" Sam Beals ..... rig bldg
" Wesley Chambers No 4 300
Edmund Heirs, Urquhart & Lavens ..... rig
E Slicker, div 5, Painter & Co (old) ..... rig
" Austin & McCormick 800
John Hendel, Koch Oil Co No 5 (old) ..... rig
Amos Strutman, Booth, Gifford & White (old) ..... rig
Hess, L Oil Co No 3 500
" " No 4 ..... rig bldg
Black, Doyle, Gill & Co No 6 ..... sand
" " No 7 ..... sand
" Hess & Sackett No 12 500
H J Smith, Geo LeFlemme & Co No 3 ..... drilling
" Shaffer & Sheasley No 3 (old) ..... rig
Baum, Berlin & Co No 8 100
Geo Hess, Milliken No 4 300
Fye, Fye & Co ..... rig
Fern, Booth, Gifford & White No 8 650
Kinnemuth, Pagett & Co No 2 ..... rig
" " No 3 ..... rig bldg
Widow Deitrich, (Seibert lease) Wolf & Bell No 3 (old ..... rig
John Herrmann, " No 4 800
" " No 5 ..... rig
" " No 6 ..... rig

Cotherman, Weaver & Taylo 100
" Wm Pagett (old) ..... rig
Widow Deitrich, " No 1 300
C F Stumpner, John M Deitrich (old) ..... rig
Long, R J Nicholson (old) ..... rig
Leslie, Wood, McIntyre & Buzzard ..... sand
Berlin, Berlin & Son (fishing) 600
Hermann, Young & Roess Bros No 2 300
Scott Mimm, Peter Fertig & Stewart (old) ..... rig
Scheffler, Hall & Co ..... rig bldg
Deitrich, Kale Bros & Co No 2 800
" " No 3 ..... rig
Ray, P H Judd & Geiser ..... drilling
Lynn, Shaffer, Sheasley & Taylor ..... sand
Haun, Hite & Dobson ..... rig bldg
Shippenville, Pye & Co ..... rig
Fox Estate, Fox and Fink No 28 100
Leeper Tract, Leeper & Arnold 800
3326, Cook & Co ..... rig
Yorkers & Black ..... rig bldg
Smith, Haun, Smith & Wagner ..... rig
Lucinda Furnace, McGrew Bros ..... rig bldg

New rigs 24
Old rigs 13
Wells drilling 28

Total 65

BUTLER AND ARMSTRONG.

Kesselman, Bott & Story (old) ..... rig
J Pontius, Lynch & Co (old) ..... rig
S Pontius, Hunter & Cummings No 7 (fishing) 1400
" " No 8 ..... rig
Beidenbach, Fisher Oil Co (fishing) ..... sand
McClea, Smith & Boyd (old) ..... rig
" Hunter & Cummings No 5 ..... rig bldg
Mrs Ort, Westerman & Co No 5 400
Tittley, Tittley & Co No 3 (fishing) 550
" " No 4 ..... rig bldg
Black, Ross, Reynolds & Co (old) ..... rig
Barnhart, Westerman & Co No 2 ..... rig bldg
" McTamany & Co No 1 ..... drilling
" Dennison & Co No 1 ..... rig bldg
" Reep & Sutton ..... rig bldg
McKeever, Showalter Bros & Hartman No 2 600
" " No 3 100
" " No 4 ..... rig
Thos Glenn, Fetzer, Dale & Larkin 300
Duffy, Irelan & Hughes 200
" Greenlee & Co No 1 200
Geo Burford, Dale Walford & Co 200
Frederick, Westerman & Co No 1 200
Miller, Dennison & Co No 2 200
" " No 3 ..... rig bldg
M Maley, Greenlee & Co ..... rig bldg
Graham, Sheffield, Campbell & Co ..... rig bldg
O'Brien, Bott & Story 1300
John Rogers, Reep & Sutton ..... rig bldg
O'Donell, McBride & Campbell 700
Renfrew, Christie Bros ..... drilling
" McTamany & Co No 2 1300
Aldinger, Kittanning Oil Co ..... drilling
Burr, P Smick 1300
Dicker, Painter Bros 1000
McCandless, J D McJunkin No 1 200
" Root, Johnson & Co 200
Nolshine, J B McJunkin 100
Rape, Fishel & Connor ..... rig
Near Tunnel P & W R R, Boyd & Semple ..... rig bldg
Snyder, Myers & Simcox ..... drilling
Smith, Colvert & Co 100
Johnson, Phillips Bros (fishing) 1400
Nancy Martin, " 800
Gallagher, " ..... rig bldg
Story, Hazelwood Oil Co ..... drilling
Logan, McCandless & Co (plugged) 1400
Chandler, Craig & Cappeau 900
LeFever, " ..... rig
Squire Reatt, Hunter & Cummings (old) ..... rig
" Fisher Oil Co No 1 ..... rig
Gallagher, Hunter & Cummings (fish'g) ..... sand

St. Joe.

Widow Martin, Campbell & Murphy (fishing) 600
Mulligan, McTamany & Co No 1 800
Widow Witt, McGuire & Co No 3 (fishing) ..... rig sand
Shultz, Gordon & Hopkins ..... rig
Lane, P C L & P Co ..... rig

Martinsburg.

Turner, W J McKee No 7 ..... rig
D P Kelley, Brawley ..... rig
John Kelley Kelley & Co ..... rig
L Daubenspeck, James Elliott ..... rig bldg
Thos W Kelley, Conley Oil Co ..... rig bldg
Abner Kelley, Mildren & McKissock ..... rig bldg

Thorn Creek.

Noel, H H Stow, No 2 100
Wallace, Sheidemantle (old) ..... rig
Mahaffy, Pennell & Co (old) ..... rig
Hartman Leidecker & Turner 200

New rigs 25
Old rigs 7
Drilling 35

Total 67

Washington.

Gordon, P L & H Co No 3 (old)	rig
" " No 4 (old)	rig
Hess, " No 1 (for gas)	2073
" " No 2	2105
McLane, " No 1	2080
Farley, " No 2	rig bldg
Taylor, " No 1	rig bldg
Weaver, Citizens' Oil & Gas Co No 1	1400
" " No 2	rig
Hall, Vandergrifts No 1	2330
Weirich, " No 1	2340
" " No 2	rig
Mrs Curry, " No 1	575
I Wilson, " (old)	rig
Wm Barre, "	100
" " No 2	rig
Taylorstown, Vandergrifts	500
Weirich, Union Oil Co	1900
McGovern, "	1800
Taylor, "	rig bldg
Weirich, Coast Sons & Co	1300
Wylie, "	250
Lynn, "	rig bldg
Lead Works, Mulholland & Co	2140
" Caldwell & Marsh	1200
Clark Heirs, R H Thayer & Stetheimer No 1	2000
" " No 2	1200
Brownlee, Hallam & Co (old)	rig
Clark Heirs, " (old)	rig
Montgomery, Robbins, McKinney & Co	2392
Barre Pew & Emerson No 1 (old)	rig
Barre, Pew & Emerson No 2	rig bldg
Smith, Belmont Oil Co No 2	50
Cameron, "	rig
Davis, Conroy & Johnson No 1	1350
Cradle Factory lot, W S Guffey & Co	700
Harry Shirls, Harry Shirls	800
Lone Pine, Caldwell & Co	400
Reed, (near Wyland Station) Asso'd Prod Co	rig
Zelt, A P Co & Union Oil Co	rig
Munce Heirs, Isaac Willetts No 1	50
" " No 2	rig bldg
J Manifold, Pew & Emerson	100
Williston, (Mt Pleasant) R Robbins & Co (gas or oil)	2100
Claysville, Claysville Natural Gas Co	2000
Wilson, Thayer & Stettheimer	rig
Kountz, Pew & Emerson	50
Wylie, P W & Emerson	rig bldg
Humbert, Wm Munhall & Co	rig bldg
Hallam, Hallam & Sons	rig bldg
W J Munce, John McKeown	rig bldg
Wylie, Wm Munhall	rig bldg
McGovern, Hukill & Co	rig bldg

New rigs	18
Old rigs	6
Drilling	28
Total	52

Miscellaneous.

SHOUSTOWN, ETC.

Neville Island, Geo H Dimick & Co	100
Montour Run, (Smith farm) Dorrington & Co	800
Mt. Nebo, (P Richie farm) Frederick & Co	1700
Rochester, (Trumpeter farm) Gailey Bros & Co	rig bldg
Wood Lawn, (McDonald) "	drilling
Economite tract, Economites	2 rigs
Beaver River, (Davidson farm) Gailey Bros	rig
Simpson McKee, Gailey & Guffey	drilling
Duncan, "	drilling

SHOUSTOWN.

McCoy Heirs, Raccoon Oil Co	400
Wm Hood, "	800
Agnew, A F Allen Brown	1200
Green, Raccoon Oil Co	rig

GREENE COUNTY.

Fordyce E M Hukill & Co No 1	1467
Gregg, " No 1	1700
Girard, " (shut down)	1062
Hathaway, " (shut down)	1060
Mt. Morris, (L Donnelly) E M Hukill & Co (old)	rig
Longanecker, E M Hukill & Co (old)	rig
Vance, Porter, Quick & Co	700

New rigs	5
Old rigs and shut down	4
Drilling	12
Total	21

January Production Report.

Reports of the stocks on hand at 6,222 Bradford wells showed an average increase of one and six-tenths barrels to the well during January:

Time.	No. Wells.	Gross Stocks.	Average per well.
February 1, 1886	6,247	334,926	53 6
January 1, 1886	6,222	323,350	52.0
Difference	25	11,576	1.6

The number of wells in the Bradford field connected with the pipe lines on the 1st of February is estimated at 13,785. Estimating the entire Bradford region on the basis of one and six-tenths barrels increase, the total increase in stocks at wells during January was 22,056 barrels, a daily average of 711 barrels. Adding the increase in stocks to the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for January is as follows:

	Barrels.
Average Daily Pipe Line Runs	27,966
Average Daily Increase of Stocks at Wells	711
Bradford's January Production, estimated	28,677
" December " "	29,223
Average Daily Decrease	546

These figures show a decrease of 546 barrels a day in the production of the Bradford field during January.

THE ALLEGANY FIELD.

The Stock reports of the Allegany field are summarized as follows:

Date.	No. Wells.	Gross Stocks.	Average per well
February 1, 1886	1,167	42,133	36.1
January 1, 1886	1,160	40,618	35.0
Difference	7	1,515	1.1

The wells from which reports were received had an average increase of one and one-tenth barrels to the well during January. With 4,030 wells in the field on the 1st of February, these figures give a total increase for the field of 4,433 barrels, or an average increase of 143 barrels per diem. Adding this amount to the average daily pipe line runs, 6,235, the sum, 6,378, will represent Allegany's production during January. The December average was 6,196 barrels.

These figures give an average increase of 182 barrels a day in the production of the Allegany field for January.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Jan. 1.	No. Wells Feb. 1.	Average per well Jan. 1.	Average per well Feb. 1.
Clarendon and Tiona	208	217	31	29
Cherry Grove	22	22	48	74
Cooper District	148	148	46	52
Thorn Creek	35	35	154	143
Lower Country	89	88	55	57
Miscellaneons	179	181	91	103

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for January and December is as follows:

Field.	January. Barrels.	December. Barrels.
Bradford	28,677	29,223
Allegany	6,378	6,196
Outside Runs	22,2 7	24,184
Total	57,272	59,603

The above figures show a decrease in the production of 2331 barrels a day. In these estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19.162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65 018	69,445
June	33,753	35,279	11,108	13,499	19,977	18 330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10.384	12,264	22,830	18,969	66,567	66,320
September	32.976	34,965	9,877	12.335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63,876	67,981
November	31,789	35,026	8.642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60,627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55 529	59,240
February	27,051	32 378	7,196	11,607	19,800	18,561	54,047	62,596
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55 505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	2 ,870	56,721	66,119
August	29,858	33,353	7,065	10 384	18 608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23.161	22,762	60,088	63 876
November	31,335	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8 260	22,217	18,594	57,272	55,529

In the above report no account is taken of the Macksburg field, which had an average production of about 1,768 barrels a day in January, 1,971 barrels in December, 2,031 barrels in November and 2,053 barrels in October.

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	Jan. 23, 1886. Barrels.	Dec. 26, 1885. Barrels.
Seven Continental Ports	769,387	807,421
London	217,407	220,407
Trieste	12,393	14,705
Total Stocks afloat and ashore	999,187	1,042,533
Decrease in stocks since December 26	42,646	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1884. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS JANUARY 23, 1886.

PORTS.	Stocks week ending Jan'y 23.		Stocks afloat week ending Jan'y 23.		Loading, Week ending Jan'y 23.		Grand total stocks afloat and load ng.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	78,252	139,907	30,651	32,500	22,000	45,000	130,903	217,407	274,203	445,765	409,312	413,845
Trieste	17,837	3,000	23,886	9,393	----	----	41,723	12,393	------	------	------	------
Bremen	466,458	219,494	52,804	53,4[illegible]8	8,000	37,000	527,262	309,982	427,256	333,976	692,178	562,552
Hamburg	108,927	37,229	29,526	39,584	19,000	34,100	157,453	110,913	670,335	598,180	7 6,152	741,793
Antwerp	108,489	20,945	58,262	73,870	18,500	56,900	185,251	151,715	669,641	537,625	726,4 5	628,097
Rotterdam	42,162	24,387	16,883	30,194	6,0 0	15,500	65,045	70 081	137,659	256,868	158,341	301,418
Amsterdam	25,497	30,780	19,245	25,071	12,500	15,000	57,242	70,851	145,482	152,467	160 921	149,058
Stettin	39,817	27,315	2,466	9 059	2,700	------	44,983	36,374	202,222	218,148	200,052	249,245
Danzig	11,450	19,471	3,261	------	------	------	14,711	19.471	60,801	58,858	57,926	53,767
Total	802,800	379,621	182,447	231,266	66,700	158,500	1,051,947	769,387	2,313,396	2,1[illegible]6,122	2,732,015	2,685,930

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,177,470	1,144,273	802,800	379,621
Total afloat, " "	94,350	203,728	182,447	231,266
Total loading	149,900	125,500	66,700	158,500
Total	1,421,720	1,473,501	1,051,947	769,387
Afloat and loading for direct Continental Ports	13,100	82,900	--------	23,400
" " " Baltic Sea, exclusive Stettin and Danzig	1,200	4,000	4,000	8,000
" " " Total Continental Ports	1,436,020	1,560,401	1,055,947	800,787
" " " Total London	281,865	391,898	130,933	217,407
" " " English harbors, exclusive London	112,900	99,600	80,000	21,300
Grand total	1,830,785	2,051,899	1,266,850	1,039,494

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, DECEMBER, 1885.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., JAN. 11, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS		ILLUMINATING.		LUBRICATING & PARAFINE OILS		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	5,000	480	480	65	413,937	49,851	4,447	807	------	------	423,864	51,203
New York, N. Y	3,817,935	290,514	339,150	33,910	26,910,623	2,494,545	1,343,538	272.076	86,3 0	5,108	32,488,586	3,096,153
Philadelphia, Pa	2,106,884	145,911	226,040	16,208	8,485,668	732,960	18,395	3,057	126,000	7,398	10,962,987	905,534
Baltimore, Md	--------	-------	--------	-------	1,103,815	94,091	4 523	705	------	------	1,108,338	94,796
San Francisco, Cal	--------	-------	--------	-------	--------	--------	--------	--------	--------	--------	--------	--------
All other districts	--------	-------	--------	-------	--------	--------	--------	--------	--------	--------	--------	--------
Total for Dec'ber, 1885	5,929,849	436,905	556,670	50,183	36,914,043	3,371,447	1,370,903	276,645	212,310	12,506	44,983,775	4,147,686
Total for Dec'ber, 1884	8,663,992	613,716	1,799,121	140,005	36,573,181	3,232,864	1,369,493	282,816	435,2 4	22,592	48,840,991	4,291,993
Total for 12 months ending Dec. 31, 1885	81,229,072	6,025,105	14,589,624	1,133,769	443,841,438	39,138,132	12,699,533	2,583,105	5,726,952	334,170	558,086,619	49,214,281
Total for 12 months ending Dec. 31, 1884	79,679,395	6,102,810	13,548,489	1,106,866	431,776,528	39,150,979	11,913,210	2 420,588	5,360,106	327,268	542,217,728	49,108,511

CRUDE QUOTATIONS FOR JANUARY, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
F 1																
S 2	88⅝	91⅞	88⅝	91	88¾	91¾	88¾	91⅜	88½	91⅞	88¼	91⅛	88¾	91¾	88⅜	91¼
M 4	91⅝	91¾	90	90⅛	91⅜	91½	90	90	91¼	91½	90	90⅛	91¼	91⅜	90	90¼
T 5	90⅜	91⅛	89⅞	90	90	91	89¾	90⅛	90	91⅛	89⅞	90	90	91½	89⅞	90
W 6	89⅜	89⅞	86⅞	87¾	89⅜	89⅜	86¾	87¾	89¾	89¼	86⅞	87¾	88⅝	89⅝	86⅞	87⅝
T 7	88	90	88	89⅞	88½	90	88	89¾	88	90	87⅞	89⅞	88	90⅛	88	89⅞
F 8	90	90	87⅜	87⅞	90	90	87⅜	87⅞	89¾	89¾	87⅜	88	90	90	87½	87⅞
S 9	87⅝	88⅝	87¼	87¾	87½	88⅝	87½	87¾	88	88¾	87½	87¾	87¾	88¾	87½	87¾
M 11	87⅞	88	87⅜	87⅜	88	88	87¼	87¾	87⅞	88⅛	87⅜	87⅜	87⅞	88⅛	87¼	87¼
T 12	87¼	87⅝	87	87¼	87¼	87⅝	87	87⅜	87⅜	87¾	87	87⅜	87¼	87⅝	87	87⅜
W 13	87½	88⅛	87¼	87½	87⅜	88¼	87¼	87¼	87½	88¼	87¼	87⅜	87½	88⅛	87¼	87⅜
T 14	87½	88½	87⅛	88¼	87½	88½	87⅛	88¼	87½	88⅝	87	88¼	88½	88⅝	87⅛	88⅜
F 15	88½	88½	87¼	87⅜	88¼	88⅜	87¼	87¾	88⅝	88¾	87¼	87¾	87⅞	88⅝	87¼	87⅝
S 16	87¾	87⅞	87⅜	87⅝	88	88	87¼	87⅝	87⅞	88	87¼	87¾	87⅞	87⅞	87⅜	87⅝
M 18	87⅞	88	87⅜	87½	88	88⅛	87⅜	87½	88	88⅛	87½	87⅝	88	88	87⅜	87½
T 19	87¾	88¾	87½	88⅜	87¾	88¾	87½	88½	87¾	88⅞	87½	88⅝	87⅜	88¾	87½	88½
W 20	88½	88⅝	88	88	88⅝	88⅝	87⅞	88	88¾	88¾	88	88⅛	88⅝	88⅝	88	88
T 21	87¾	88⅜	87⅝	88¼	87⅞	88⅜	87⅝	88⅛	88	88½	87¾	88¼	88	88⅜	87⅝	88¼
F 22	88¼	88¼	87⅞	88⅛	88¼	88⅞	87⅞	88	88⅜	88⅜	87⅞	88¼	88¼	88¼	87¾	88⅛
S 23	88⅛	90	88	89⅞	88⅛	90⅛	88	89⅝	88¼	90⅛	88	89¾	88¼	90⅛	88	89⅝
M 25	89½	91½	89½	91⅜	90½	91⅜	89¾	91½	90	91½	89⅝	91⅜	89⅝	91⅝	89⅝	91½
T 26	91¼	92¼	89½	89¾	91¼	92¼	89⅝	89½	91¼	92¼	89½	89¾	91	92¼	89½	89⅜
W 27	89¾	90⅛	88⅝	89¼	89¾	90¼	88⅝	89⅜	89¾	90¼	88½	89⅛	89¾	90⅛	88⅝	89⅛
T 28	89½	89½	87¾	87⅞	89⅝	89⅝	87¾	87⅞	89	89⅝	87¾	87⅞	89¼	89¼	87⅞	87¾
F 29	87¼	87¼	83⅜	83⅝	87	87⅜	83½	83½	87⅝	87⅝	83⅜	83¾	87¼	87¼	83½	83⅜
S 30	83	83½	81¾	82½	83	83⅜	81⅝	82⅝	83¼	83¼	81¼	82⅝	83¼	83⅜	81½	82⅝

The Kane Oil Field.

About the middle of January, when the AGE's last monthly review of the Kane oil field was written, the air of the elevated village was very depressing. In oil region parlance the field looked sick. The oil scouts had turned the oil map hanging in the Thompson House against the wall and by deserting the field for other points of interest said that the district was no longer capable of influencing speculative values. It is always darkest before dawn, and the Kane Oil Company's well on the southeastern corner of lot 426 was the silver lining to the cloud which enveloped the field on the breezy summit. The well is situated about 400 rods north of the Craig & Cappeau and 40 rods east of it. The sand was struck on the 28th of January at a depth of 2207 feet and the well responded to the touch of the drill at the rate of 125 barrels per day. When the oil first appeared Mr. Porter, who is interested in the company, said the measuring line showed a depth of 2213 feet and he estimated that the sand had been penetrated to a depth of six feet. How far they have since drilled the public has not been informed. This fortunate strike gives a northern drift to the Kane pool or belt, and since the strike, prospectors have been as eager to invest to the northeast as they were to the southwest before that end of the field had attained its dusty record. At this writing, February 11th, it is three months since the Craig & Cappeau well on warrant 3767 was struck and in that time 15 wells have been drilled into the sand.

The map of the field published in the January number of the AGE will show the location of each of the following wells. Their production for the 24 hours ending February 11th is given below:

LOT.	OWNER.	BARRELS.
3778,	M. Murphy	dry
3781,	Associated Producers	dry
3781,	Chapman & Fi kins	dry
3775,	(Griffith) lot 11, Kane Oil Co. No. 1	gas
3775,	" lot 11, " No. 2	est. 75
3775,	" lot 12, P. T. Kennedy	45
3775,	" lot 19, Simpson & McMullen	0
3775,	" lot 20, Bayne, Fuller & Co	est. 15
3767,	Associ ted Producers No. 1	14
3767,	" No. 2	33
3767,	Craig & Cappeau No. 1	54
3767,	" No. 2	60
3767,	Roy, Archer & Cle enger	gas
424,	Tennent & Co	gas
426,	Kane Oil Co	125
		451

Wells finished	15
Dry	3
Gas	3
Producing	9

Of the fifteen wells completed three are dry, three gas wells and the remaining nine are producers of oil. The producing wells range in size from 10 barrels to 125. Simpson & McMullen's well on sub-division 19 and Bayne, Fuller & Co.'s well on 20 of the Griffith lot will have a small yield of oil, and are rated from 10 to 20 barrel wells. At the Simpson & McMullen well the sand, which had a thickness of 25 feet, was struck at a depth of 2295 feet and the drill stopped 2335 feet below the surface. According to barometric levels the mouth of the well is 101 feet lower than the Craig & Cappeau No. 1. The well was given a 75 quart shot on the 5th of February, but up to this writing has not been put to the test as a producer. At Bayne & Fuller's well they reached the oil bearing rock at 2350 feet and stopped the drill at 2400. The sand was 22 feet in thickness and the well is producing at this date 15 barrels per day. The Tennent gas well on lot 424 has been drilled deeper since the gas was first struck and a slight showing of oil was disclosed at a depth of 2300 feet. The sand which afforded the oil was about 10 feet in thickness. The bottom of the well is 2318 feet. The Kane Oil Company's well on the northeastern corner of division 11 of the Griffith warrant is a gasser and is situated almost due south of the Craig & Cappeau No. 1. This well and the one drilled in the southeastern corner of warrant 3767 demonstrate that the territory immediately east of the Kane Oil Company's gas well on lot 11 will be gas territory or dry.

Shirley & Hochstetter's well on lot 424 was drilled into the sand during the last days of January and has since been shut down. They, with other parties, have been making purchases of land in the vicinity which would indicate that the well is near oil territory.

During the month of January only one new rig was built, and the count on the last day of the month showed 5 new rigs, 6 old ones and 15 wells drilling, a total of 26. Since the well of the Kane Oil Company was completed on lot 426 there has been an increase in the volume of new operations, and on the 11th of February there were 17 new rigs, 7 old ones and 12 wells drilling, a total of 36.

Washington Field.

The Washington oil field affords a surprise in nearly every well that is sunk to the Gordon sand, and it is difficult to find two wells in the district that display the same characteristics. The Belmont Oil Company or Dyer & Co.'s well on the Smith farm, which was drilled into the sand on the 5th of January, was producing over 350 barrels on the last day of that month, and on February 13th the scouts report its yield above 300 barrels. The monthly report for January 31st showed 18 new rigs, 6 rigs which had been standing for thirty days or longer and 28 wells drilling, making a total of 52. A count by the scouts, February 13th, gave 27 rigs up and building and 37 wells drilling, a total of 64. While the field is yet in an experimental condition new operations are steadily increasing, and the first thirteen days of the month indicate an increase of 12 rigs and drilling wells.

Robbins, McKinney & Co.'s well on the Montgomery farm, about midway between the Gordon No. 1 and the Gantz wells, made its first flow from the Gordon sand January 27th. It was dry in the Gantz sand and 50 foot, and according to the latest reports is producing 15 barrels from the deep sand.

The Gordon No. 2 was four bits in the Gordon sand January 21st and is now producing about 30 barrels daily. It is located about 80 rods south of the Gordon No. 1 and is a much smaller well. The Vandergrifts' No. 1 on the Weirich farm is producing 50 barrels daily from the "50 foot." Their well on the Hall farm will make a producer from the Gordon sand. The P. L. & H. Co.'s No. 2 on the Hall farm sprays oil from the "50 foot" and will be drilled to the deep sands.

The Union Oil Company's well on the McGovern farm had a showing of oil in the Gantz sand but none in the 50 foot. Their well on the Weirich, about 100 rods southwest of the Vandergrifts' well on the same farm, passed through the Gantz sand and "50 foot" without disclosing any indications of crude. The total daily production of the Washington field February 13th was about 475 barrels from seven wells. The prospects for a field in Washington county are encouraging and important test wells are projected and some of them already under way at quite remote points from the producing wells.

Shoustown.

The Raccoon Oil Company's well on the McCoy heirs farm in the eastern part of Beaver county has furnished a Bradford bear with a pretext for raiding the market

and at this writing, February 16th, is mystified and under guard. It is situated about one mile in a southwesterly direction from the Ohio river and three-quarters of a mile from the Dilworth dry hole on the Langfitt farm. Clark Hayes and E. H. Jennings, of Bradford, have an interest in the well and leases of nearly 6000 acres of land with the Raccoon Oil Company.

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY.

Division of Field.	January, 1886. Wells.	Prod'n.	Dry.	December, 1885. Wells.	Prod'n.	Dry.
Scio	1	5	0	6	30	0
Alma	8	30	1	12	58	0
Wirt	16	91	2	11	67	0
Bolivar	6	37	0	7	32	0
Clarksville	3	17	0	14	84	2
Genesee	9	58	1	3	16	0
Miscellaneous	1	0	1	2	0	2
Total	44	238	5	55	287	4

BRADFORD FIELD.

Division of Field.	January, 1886. Wells.	Prod'n.	Dry.	December, 1885. Wells.	Prod'n.	Dry.
E. and W. Branches	12	90	1	21	132	1
Kendall Creek	5	31	0	6	46	0
Foster Brook	10	69	0	7	41	0
Knapp's Creek	6	30	1	6	48	0
Four Mile	1	10	0	4	28	0
Indian & Meeks Creeks	3	28	0	8	56	0
Cole Creek	5	60	0	6	73	0
Kinzua	1	15	0	3	35	0
Miscellaneous	1	0	1	2	0	2
Total	44	333	3	63	459	3

WARREN AND FOREST.

District.	January, 1886. Wells.	Prod'n.	Dry.	December, 1885. Wells.	Prod'n.	Dry.
Glade	9	78	3	15	258	3
Clarendon	19	102	1	34	197	0
Tiona	31	166	2	31	185	1
Cooper	3	23	1	3	29	0
Balltown	8	180	1	6	215	0
Kane	7	220	4	1	96	0
Miscellaneous	6	26	1	6	11	3
Total	83	795	13	96	991	7

LOWER COUNTRY.

District.	January, 1886. Wells.	Prod'n.	Dry.	December, 1885. Wells.	Prod'n.	Dry.
Venango	41	403	17	53	414	14
Clarion	32	527	2	66	1562	9
Butler and Armstrong	16	232	4	22	173	8
Washington	2	410	0	0	0	0
Miscellaneous	3	45	1	0	0	0
Total	94	1617	24	141	2149	31

GRAND SUMMARY.

District.	January, 1886. Wells.	Prod'n.	Dry.	December, 1885. Wells.	Prod'n.	Dry.
Allegany	44	238	5	55	287	4
Bradford	44	333	3	63	459	3
Warren and Forest	83	795	13	96	991	7
Lower Field	94	1617	24	141	2149	31
Total January	265	2983	45	355	3886	45
Total December	355	3886	45			
Difference	90	903	0			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	January 31, 1886. New Rigs	Old Rigs	Drilling	Total	December 31, 1885. New Rigs	Old Rigs	Drilling	Total
Scio	1	4	6	11	0	4	6	10
Alma	6	12	8	26	3	12	12	27
Wirt	22	0	12	34	9	1	21	31
Bolivar	6	3	3	12	4	3	7	14
Genesee	3	10	1	14	2	10	3	15
Clarksville	15	6	8	29	12	6	11	30
Miscellaneous	4	0	2	6	1	0	2	3
Total	57	25	40	132	32	36	62	130

BRADFORD FIELD.

Division of Field.	January 31, 1886. New Rigs	Old Rigs	Drilling	Total	December 31, 1885. New Rigs	Old Rigs	Drilling	Total
E. and W. Branches	7	16	19	42	6	16	15	37
Kendall Creek	1	1	4	6	4	1	4	9
Knapp's Creek	4	5	7	16	6	1	10	17
Foster Brook	6	2	11	19	6	3	13	22
Four Mile	3	3	4	10	4	3	1	8
Indian Creek	5	4	6	15	3	4	5	12
Cole Creek	6	3	9	18	4	3	7	14
Kinzua	1	0	3	4	2	0	3	5
Miscellaneous	1	0	4	5	2	0	3	5
Total	34	34	67	135	37	31	61	129

WARREN AND FOREST.

Division of Field.	January 31, 1886. New Rigs	Old Rigs	Drilling	Total	December 31, 1885. New Rigs	Old Rigs	Drilling	Total
Glade	11	1	10	22	9	2	12	23
Clarendon	18	3	20	41	22	3	18	43
Tiona	20	2	22	44	33	3	24	60
Cooper	4	3	2	9	1	3	3	7
Balltown	3	0	8	11	3	0	7	10
Kane	5	6	15	26	17	0	15	32
Miscellaneous	6	1	12	19	10	1	5	16
Total	67	16	89	172	95	12	84	191

LOWER COUNTRY.

Division of Field.	January 31, 1886. New Rigs	Old Rigs	Drilling	Total	December 31, 1885. New Rigs	Old Rigs	Drilling	Total
Venango	43	8	32	83	39	9	42	90
Clarion	24	13	28	65	32	11	35	78
Butler & Armstrong	25	7	35	67	14	10	31	55
Washington	18	6	28	52	13	0	21	34
Miscellaneous	5	4	12	21	11	0	9	20
Total	115	38	135	288	109	30	138	277

GRAND SUMMARY.

Field.	January 31, 1886. New Rigs	Old Rigs	Drilling	Total	December 31, 1885. New Rigs	Old Rigs	Drilling	Total
Allegany	57	35	40	152	32	36	62	130
Bradford	34	34	67	135	37	31	61	129
Warren and Forest	67	16	89	172	95	12	84	191
Lower Country	115	38	135	288	109	30	138	277
Total	273	123	331	727	273	109	345	727
Total Dec. 31	273	109	345	727				
Difference	0	14	14	0				

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THE GEOLOGY OF THE PITTSBURGH COAL REGION.

A PAPER READ BEFORE THE AMERICAN INSTITUTE OF MINING ENGINEERS, BY J. P. LESLEY, STATE GEOLOGIST OF PENNSYLVANIA.

THE Pittsburgh coal region, if we regard the greatness of its extent, the picturesque beauty of its scenery, the salubrity of its climate, its relative situation on the Continent, the fertility of its soil, its unrivalled mineral wealth, and its magnificent system of natural transportation, is, perhaps, the most valuable spot on the surface of the planet.

Unlike the mythical Paradise inhabited by one man and one woman, it swarms with an abounding population, not living on the free gifts of nature without care and without toil, but expending its energies in unremitting labor, reinforced by the most elaborate machinery, in the production of everything which mankind needs or desires; and unlike the Paradise of story from which flowed the four great rivers of the world in opposite directions, its own four rivers flow from the surrounding world into it, to constitute by their union the great highway water-course which divides the Northern from the Southern States. These rivers are the Monongahela, coming from the south, the Youghiogheny from the southeast, the Kiskiminetas from the east, and the Allegheny from the north. Uniting at the great city of Pittsburgh, they constitute the Ohio, which flows northwest and west, and then south and southwest, toward the Mississippi.

The Monongahela has been made navigable by a system of dams and pools; the Allegheny was navigable in its natural condition; the Kiskiminetas was made navigable by a State canal which has been vacated; and the Youghiogheny remains unnavigable.

Railroads supplement the deficiencies of the rivers, follow their banks, and share in the transportation for which the waters are not sufficient. Railroads and rivers concentrate at Pittsburgh; other railroads cross the highlands to the east and west; and branch roads ascend the side-valleys and ravines to the mines on the uplands.

The whole region is a scene of life; towns and villages dot its surface in all directions; hundreds of gangways open upon the sides of all the valleys, and deliver coal to trains of cars which move beneath them at water level; furnaces and rolling mills abound; hundreds of oil wells furnish a flood of liquid fuel to pipe lines extending to retaining tanks for foreign exportation, or the use of refineries; and the gas wells are connected by similar pipe lines with the iron works, to which they descend from a distance of many miles. These are the greater features of the business life of the region; the minor features are made up of an infinite variety of large machine shops, warehouses and private homes. A vast community has organized itself by the spirit of the nineteenth century in a thousand forms of intelligence and force. Labor and capital, although holding each other mutually in check, are vitually and essentially co-indulgent and co-operative; and will undoubtedly in the long run, and at no distant day, educate each other into a common understanding and mutual respect. There seems to be no limit to the development of every kind of human life in the region; and while the population of the denser centers must continue to double its numbers every quarter of a century, the vast outspread of upland will always insure it comfortable sustenance, and become one of the gardens of the world, populous, prosperous and beautiful to every eye; dependent, yet independent; a region of rural homesteads, dotted with towns and villages, with their own appliances of advanced civilization; while gradually, as the centuries elapse, collieries with deep shafts will be established in all parts of it, and the stories of Manchester, Sheffield and Coventry, in England, will be repeated at their full value.

The sketch which I have just made with a few simple strokes is sufficient to justify the statement that the Pittsburgh region is unique in the United States; and I feel sure that every intelligent traveller in distant countries of the world will be disposed to call it unique upon the surface of the globe; for nature has here expended all her resources for the advantage of a human population, bringing together and bestowing upon the citizens of Western Pennsylvania in a combined form the various natural gifts for which separately her bounty has been celebrated in other regions.

It is my object in this paper to show that all this wealth of life and splendor of endowment is based upon the geological character of the region. If its underground constitution were not Carboniferous, and if this constitution were not characterized by the extraordinary horizontality and continuous outspread of the Carboniferous rocks, the city of Pittsburgh, with its surrounding towns and villages, mines, mills and furnaces, dams, pools and steamboats, fleets of barges, trains of railroad cars, oil well derricks and gas pipe lines, would have been merely a poet's dream, and not the great reality in which its people glory. If, like London, it were built upon the tertiary formation, although by the sea, its commerce would have been small, and its development that of an ordinary inland town. If, like Paris, the surrounding country for many miles had been a Cretaceous plain, producing nothing but quarry stone, artesian waters, and the marvellous forms of extinct animals, it would never, without a royal, imperial, or national court to give it eminence, have made a figure among the cities of the great republic, notwithstanding its ancient settlement and its admirable situation. But as things are, its incalculable wealth of coal, absolutely inexhaustible for several thousand years, has made

Pittsburgh the envy of the business world, and is a sufficient guaranty for a destiny of inimitable magnificence in a not distant future. This region will be an empire of itself, as wealthy, as powerful as England, subsidizing all other countries for its own uses, and unassailable from all quarters of the compass.

I confine the statement to coal, because I look upon coal as the only permanent element of the story. Petroleum and natural gas, which for the moment play so distinguished a *role* in the history of the Pittsburgh region, are merely supplemental to its prosperity—a temporary, a fugitive condition to its wealth; and, although inseparable from the main features of the Carboniferous geology, yet to be treated entirely apart from coal in our forecast of the future. They make indeed a most important chapter in our description of the geology of the region; but that chapter will be seen in course of time to be merely an appendix to the book. They go together into the chapter; for oil and gas are but two aspects of one and the same substance, originally united and still in combination; the one a product of the other; but neither of them holding any natural relationship to coal. The oil and gas obtained from cannel coal and the coal shales are not the same as the oil and gas which spouts and roars from the bore holes. The cannel coal and coal shales are themselves of a different nature from embedded bituminous coal, having been produced in a different way originally, and having a different internal constitution.

Moreover, although the Dunkard creek oil and gas come from one of the rocks of the coal measures, the oil and gas product of Western Pennsylvania at large comes from a great formation underlying all our coal measures, one in which no coal bed has ever been seen; and therefore, even if the oil and gas of that Subcarboniferous formation were not generated in the formation itself, and have ascended from a greater depth, they are still further removed from any relation to the coal measures.

I take this opportunity to express my opinion in the strongest terms, that the amazing exhibition of oil and gas which has characterized the last twenty years, and will probably characterize the next ten or twenty years, is nevertheless, not only geologically, but historically, a temporary and vanishing phenomenon — one which young men will live to see come to its natural end. And this opinion I do not entertain in any loose or unreasonable form; it is the result of both an active and a thoughtful acquaintance with the subject. From the time that Colonel Drake sunk the first well on the plains of Titusville, I have professionally participated in the history of the oil and gas developments, and believe myself to be familiar with whatever has been said and done in the premises; and there does not remain upon my mind a shadow of doubt respecting the practical extinction, in the comparatively near future, of that great commerce in oil, of which the people of Pennsylvania have foolishly taken so little advantage, when they might have accumulated from its sale in all quarters of the world a provision of moneyed wealth unheard of in the history of our race. The opportunity is indeed still offered; but it is steadily diminishing, and in a few years it will entirely pass away never to return again. For I am no geologist if it be true that the manufacture of oil in the laboratory of nature is still going on at the hundredth or thousandth part of the rate of its exhaustion. And the science of geology may as well be abandoned as a guide, if events prove that such a production of oil in Western Pennsyslvania as our statistics exhibit can continue for successive generations. It cannot be; there is a limited amount. Our children will merely, with difficulty, drain the dregs.

I hold the same opinion respecting gas, and for the same reasons; with the difference merely that the end will certainly come sooner and be all the more hastened by the multiplication of the gas wells, and of the fireboxes and furnaces to which it is led.

The exhaustion of the mineral coal of the region, on the contrary, is a practical impossibility. Every cubic yard of coal may be taken as a ton. Every square mile of a horizontal coal bed may be said to yield a million tons to every foot of coal bed—that is, for a ten-foot bed, 10,000,000 tons; or, allowing one-half for waste, 5,000,000 tons. The Pittsburgh region has an outspread of the Pittsburgh coal bed fifty miles long by fifty miles wide within the limits of the State. In the northwestern part of this area, the bed is two or three feet thick, increasing in thickness eastward and southward to 6 feet of good coal at Pittsburgh, 10 feet up the Monongahela, and 12 feet up the Youghiogheny. What the thickness of the bed may be underneath the uplands of Washington and Greene counties we now know by the new gas wells. It maintains its thickness in that direction. An average of eight feet for the whole region looks like a fair one. This gives 8,000,000 tons to the square mile, and there are 2500 square miles. Allowing one-half of the area to be interval, separating outcrops, we have then 10,000,000,000* tons remaining in this one coal bed. Allowing 50 per cent. for pillars, bad mining, and waste of all kinds, we may set down its coal available for market in the future at 5,000,000,000 tons.

The Pittsburgh bed was mined in 1884 to the extent of about 11,000,000 tons. At this rate the bed would last nearly five thousand years. But, of course, the rate will rise steadily. The output of the Monongahela slackwater in 1884 was double what it was ten years before. If it goes on doubling every ten years the output of the Pittsburgh bed will reach the rate of the British coal trade, say 200,000,000 in about forty years from now, and were the doubling of the rate to go on still, the bed would be exhausted in about eighty years from now. But such calculations are evidently ridiculous, especially in view of the growing competition of other coal beds and other coal regions of the United States. No rate of increase in the output of coal from the Pittsburgh bed will exhaust it in less time than many centuries; of this we may be perfectly sure.†

It may be interesting to hear that in 1884 the output from the Pittsburgh bed was about 60 per cent. of the whole bituminous coal production of the State, and about 33 per cent. of the shipments of anthracite.

The coal measures of the Pittsburgh region are about 2000 feet thick, and contain at least fifteen workable beds, which may be considered persistent and recognizable. Five of these beds lie higher than the Pittsburgh bed; the rest of them many hundred feet lower. Those above the Pittsburgh bed occupy smaller areas; and those below it spread much farther through the counties of Northwestern Pennsylvania. The whole series, therefore, lie upon each other like layers of a sea-shell, smaller and smaller from the lip of the shell back to its hinge; with this difference, that the uppermost coal bed was the last created, whereas in the case of the sea-shell the largest layer is the last secreted. Thus, while the

* Dr. Chance calculated it by areas, and obtained a total of 10,438,800,000 tons.

† The use of natural gas may seriously affect the advance of the rate for some years to come, and, perhaps, permanently, by introducing the use of artificial gas afterwards.

order of size and the parallelism of the edges of the layers is the same in both, the order of time is reversed. In consequence of this arrangement a bed three feet thick at the top of the series occupies an area and produces a gross total of merchantable coal only one-twentieth part of a bed three feet thick at the bottom of the series. Taking into consideration also the great extension northeastward of the lowest beds, even into the northern tier of counties, two hundred miles from Pittsburgh, and also the indefinite limits of what we may call the Pittsburgh region, any exact calculation of the total amount of coal which it possesses is impossible. But it will practically answer the purposes of this general sketch to say that. while the Pittsburgh coal bed itself will furnish 10,000,000,000 tons, all the other beds will furnish 20,000,000,000, making a total of 30,000,000,000 tons.

The geological explanation of the shell structure of the coal measures, viewed as one formation, is simple enough; for it arises from the fact of an exceedingly gentle southwestern slope of the strata from the New York State line, down the Allegheny river to Pittsburgh, and so on, through Washington and Greene counties, into West Virginia at the southwest corner of the State. This slope is practically regular for 150 miles, and amounts to about one-sixth degree, or about sixteen feet to a mile. In other words, the lowest coal bed at the base of the Conglomerate lies in Warren county just 2000 feet—and at Pittsburgh only sixty feet—above tide. We have good data for placing it under Washington at tide-level, and in Greene county, Jackson township, about 600 feet below tide-level. It falls, therefore, 2600 feet in 160 miles. All the other coal beds and intermediate sandstones, shales, limestones, clay ironstones, etc., follow the same rule, have the same slope. In obedience to this southwest slope their outcrop belts stretch crosswise northwest-southeast in a series of concentric curves, each one further south than that of the one below it.

If the region of Western Pennsylvania had been planed off to a flat surface and dead level at any given height above tide, it is evident that the outcrops of the coal beds at the limits of their areas would have been as continuous as the lines of wood layers in a plank planed by a carpenter at a low angle across the grain. Now, the agent which has removed the northern portions of the coal bed areas could be nothing else than the annual rainfall of millions of years throughout the geological ages which have elapsed since the uplift of the continent out of the ocean at the completion of the coal measures. Therefore, while the rainfall is practically uniform, acting equally on all parts of the surface of a country, yet it establishes a system of valley drainage subject to an infinite number of minute local irregularities; it follows that the northern edges of the several coal bed areas have been broken up into isolated patches in the tops of the highest hills to the north of the main body.

The Pittsburgh bed and those above it have been preserved from the general destruction only in the southern part of the region. I say *preserved from the general destruction*, for the destruction has been enormous in extent as well as in quantity. The Pittsburgh bed is now practically confined to the region south of the Ohio river, and to long narrow strips of country east of Pittsburgh. Formerly it extended much further north. This is not theory; for remains of it are mined in Indiana and Armstrong counties; and the geological map of Allegheny county shows four or five small patches of it still remaining nearly up to the Butler county line, the last one being twelve miles north of Pittsburgh.*

How much farther north the bed once extended we cannot say, because the country has been planed down to lower and lower rocks in that direction; but I have never heard an argument which seemed to me considerable against the former extension of the Pittsburgh bed and its companions of the upper productive coal measures into the State of New York, and over Northern Ohio; nor do I see any good geological reason for scouting the idea that its original area crossed Lake Erie and Lake Ontario into Canada. In 1840 I first demonstrated the ancient outspread of the Pittsburgh bed across the Ligonier valley and Somerset county, and across the Allegheny and Great Savage mountains to and beyond Cumberland in Maryland, a distance eastward of 150 miles from Pittsburgh. It is undoubtedly represented in the highest summit of Broad Top mountain, at the corner of Bedford, Fulton and Huntingdon counties; and I have no doubt that, when the geology of the anthracite region is made out in all its details, the Pittsburgh bed will be definitely recognized.

I am disposed to maintain that much of what has been published respecting the original limits of the coal vegetation, and in favor of a popular view that the present terminal outcrops of the coal beds range not far distant from their original edges, has been too little influenced by the whole array of known facts; in other words, has been too much influenced by the local limitations of the very lowest coal beds, especially those of the conglomerate series, the coal beds of Mercer county, and Trumbull county, Ohio, the Sharon coal more than all others. And yet this Sharon coal, lying at the bottom of the whole series has a great extension across Eastern Ohio, increasing in size westward to its present outcrop, from which I believe it once continued across the so-called Cincinnati anticlinal into the Indiana coal field.

But whatever may be said of the lowest coal beds, the character of the Pittsburgh and other upper coal beds is such as to put it beyond doubt that they once had a quasi-continental outspread; for, by the time that these upper coals came into existence, all the original irregularities of the conglomerate floor had disappeared beneath a thousand feet of muds and sands, which must have resulted in a nearly dead level of immense geographical extent.

If these views be correct, the State of Pennsylvania possesses only 1 per cent. of the coal which once existed within her State lines. For, at the low estimate of 100 feet of total coal bed section, as an average, in all parts of the area, there were originally four million million tons, of which there now remain only 35,000 million bituminous, and between 10,000 and 15,000 million anthracite. That is, for every million tons remaining in the State, eighty or ninety millions have been swept away into the ocean. Nor can the purposelessness of this stupendous waste of precious stuff, the very life blood of the new civilization of mankind, be adduced as an argument against the facts of the case, seeing that mankind has successfully inhabited the planet many thousand years without the use of coal; and especially, seeing that the two grand laws of God's creation are evidently these—infinite productiveness and infinite waste.

The Pittsburgh region, at least, has no reason to com-

* The bed opposite Pittsburgh is 1050 feet above tide. In Emmet's Knob, near Wexford, its floor lies at 1360 feet above tide, which gives a dip on a due south line of 310 feet in twelve miles, or 26 feet in one mile.

plain of the laws of nature, for it has escaped while the other regions have suffered.

The splendid mineral wealth of the Pittsburgh region depends—1, on the superior quality of the coal which has been preserved; 2, on the almost unlimited quantity of it within easy reach; and 3, on the exceptional facilities offered by the geological structure to mining operations; but not upon the size of the individual coal beds. Of this fact I will speak first.

There is a coal bed at Commentruy, in the south of France, 140 feet thick. The mammoth anthracite bed is in many places 60 feet thick; and other beds are 30 and 20 feet thick. But in no part of Western Pennsylvania is there a coal bed exceeding 13 or 14 feet. The Pittsburgh bed, in the neighborhood of Connellsville, and up the Monongahela, may be fairly stated at 12 feet; but it becomes 15 feet thick on George's creek, in Maryland. At Pittsburgh it outcrops along the river bluffs at an elevation of 350 feet above the water, with a thickness of 8 feet, yielding 6 feet of good coal. The other beds of the Upper Productive Coal Measures overlying the Pittsburgh bed (four of them in the over-column of 370 feet) seldom exceed 5 feet. The Washington or Brownsville bed, 150 feet still higher in the series, is as much as 11 feet thick in a few places, but is usually much reduced by partings, and has a general average of only 3½ or 4 feet.

The same thing is true of the Lower Productive Coal Measures, the three Freeport beds, the three Kittanning beds, and the three Clarion beds. The old Upper Freeport bed, which I first extensively studied in 1841, and was then disposed to compare for size and quality with the Pittsburgh bed, has here and there an exceptional thickness of 7 to 12 feet; but its general average cannot be safely stated at more than 4½ feet; for the minute survey of the area of this bed in every county of Western Pennsylvania by the various assistants of the Second Geological Survey since 1874 has shown it to be far more variable, both in size and in quality, than was supposed at first; but where of maximum size and quality it is worthy to be compared with the Pittsburgh bed. It underlies the bed of the river at Pittsburgh about 300 feet.

The size of the coal beds, therefore, in the Pittsburgh region is by no means remarkable; but this, instead of detracting from the wealth of the region, may be almost reckoned among its advantages; for the practice of coal mining has established the fact that nothing better can be desired than a nearly horizontal bed 5 feet thick, mining operations in such a bed being the easiest and cheapest possible.

The quality of the coal of the Pittsburgh region, especially of the Pittsburgh bed, is A No. 1 on the scale of merchantable coals of the world. This is not said in the spirit of any odious comparison. There are coals in other parts of the world equal to it in every respect. The coal, for example, of the Hub vein of the Glace Bay colliery, in eastern Cape Breton, is quite like it in every feature. The resemblance between that mine and mines on the Monongahela and Youghiogheny rivers is almost ridiculous; the bed is of the same thickness; the plies are arranged in the same way; the chemical analysis is identical; and the mining operations are conducted on the same plan: so that a ship load of that particular Cape Breton coal and a ship load of Pittsburgh coal laid on the same wharf could not be distinguished from each other. Many of the English coals are like those of the Pittsburgh region. But all this goes for nothing, in view of the prime fact that the Pittsburgh coal bed can be opened in hundreds of collieries along both banks of both rivers for many miles, and in all their valleys and ravines, its zig-zag outcrop being not less than 2000 miles long; whereas, the Glace Bay coal, of Cape Breton, has an exposure of only three or four miles upon a wave beaten sea coast, and an outspread inland of little more than a dozen square miles. To compare the Pittsburgh region with the Nova Scotia region would be manifestly absurd, the wealth of the one being a thousand times greater than that of the other.

In another important particular the Pittsburgh region has an eminent advantage. Its great bed lies mainly above the drainage level of the country. The coals of England and Belgium lie almost entirely beneath water level, and descend to such depths that in the government statistics of the coal reserve of Great Britain, a limit of calculation had to be adopted, at a depth of 4000 feet, beneath which general mining operations are not likely to be largely prosecuted.

At present nearly all* the mines of the Pittsburgh region drain themselves naturally, or are simply drained by trenches in the gangways, with here and there a syphon, into the open river valleys of the country. The time will come when deep shafts will be sunk to the Pittsburgh coal bed on the uplands between the Allegheny and the Ohio rivers in Washington and Greene counties; but this necessity is a thing of the distant future, and need not be taken into consideration. In like manner the Lower Coal Measure beds along the Allegheny river, the Kiskiminetas, the Mahoning, the Red Bank, the Clarion, and their numerous side streams, are mined on their outcrops, and drain themselves in a majority of cases. In other coal fields there is an underground world of hidden and expensive labor; in this favored Pittsburgh region is an upper world of easy mining, exposed to view and served by natural transportation.

I have alluded to the first-class quality of the Pittsburgh coal. I now instance the prime factors in this quality: 1. The low percentage of ash. 2. The small amount of pyrites. 3. The excellence of the coke made from it. The ash varies between 3 and 5 per cent., and seldom exceeds 6 per cent. The sulphur in analysis ranges at below 1 per cent., rising, however, occasionally to 2 or 3 per cent. in hard specimens. The coal contains from 30 to 35 per cent. of volatile matter. When coked, allowing for waste, something over one-half its weight remains as a silvery, ringing, tough and pure coke, preferable to any coke made from the coals of the Southern and Western States, chiefly on account of the absence of sulphur, but partly on account of some obscurely understood internal constitution of the coke, giving that special hardness adapted for holding up the burden in a high stack furnace.

It must be understood that the Pittsburgh bed has not a monopoly of these qualities, for they are exhibited also by the best beds of the Lower Productive or Allegheny series, as is shown by the excellent coke made from those lower beds, for example, in Clearfield county.

* The exceptions are in certain stretches of the rivers and in the basins of Westmoreland and Fayette counties.

[TO BE CONTINUED.]

A SYNDICATE of Cleveland capitalists will make a scientific search for natural gas in Belmont and Jefferson counties, Ohio. Several thousand acres have been leased near Smithfield, ten miles north of Martin's Ferry, on the Ohio river, and a half dozen wells will be started at once. Geologists and gas experts have located the prospective field and the enterprise is backed by an abundance of capital.

OIL REGION CHRONOLOGY.

For March, 1886.

March 1. Age Oil Report shows 265 wells completed in February, 35 of which are dry; new production, 3352 barrels, new rigs, 269; old rigs, 118; wells drilling, 367; total field operations, 754; increase over January, 27. Market dull and featureless. Opened at 79c, went down to 78⅜c and closed at 78½c. Carrying rates—Bradford, 35c; New York and Pittsburgh, 50c; Oil City, 45c. Reid & Brenneman's well, on lot 20, Griffith tract, showing for 10 barrels. Thayer (Clark) well, at Washington, flowing at 350 barrel rate. Thirteen producing wells in the field, making 900 barrels a day. Caldwell & Marsh, on Lead Works property, nearly through Gantz sand, with very small showing of oil. Death of Dr. C. B. Ansart, a prominent citizen of Oil City, aged 47 years.

March 2. Market inactive; opened at 78⅜c, dropped to 78¼c, sold up to 79⅛c and closed at 78⅞c. Shirley & Hochstetter well, at Kane, 40 feet in sand, without improvement; last gauge 70 barrels; shot in afternoon and supposed to have bridged over. Smith farm well, at Washington, deepened two feet, without material improvement; gauge, 294. Thayer (Clark farm) well gauge 240 barrels. Fire at Renfrew, Butler county; residences of Dr. Patterson and J. C. Garver destroyed. Small fire at Butler; boiler house of new court house badly damaged. Jacob Harkins, aged 26, killed near Tylersburg, in Clarion county, by a falling tree.

March 3. Market opened at 79c, advanced to 79¼c, and then under good buying, rallied to 80¼c, the highest point of the day It then fell off to 80c, and began to break until 78⅞c was reached, at which point it closed. Carrying rates, 20 to 50 cents. Gauge of Smith farm well, Washington, 294 barrels. Thayer well, on Clark, 260 barrels. The Mulholland & McKeever well, on the Lead Works lot, while being agitated, makes a heavy flow, and the court takes a recess to see the sight. Oil had collected from Gantz sand and the hole was nearly full of it.

March 4. The market opened at 79c, advanced to 79⅛c, fell to sales at 79c, rallied to 79¼c, slumped off to 79c, reacting to 79⅜c and again fell te 79c. Here it gained a fresh start, advancing to 79⅝c. From 1:30 p. m it vibrated between this point and 79¼c, till near the close, when it was jumped to sales at 79⅞c, closing at 79¾c bid. The Smith farm well, Washington, gauge, 296 barrels. Clark well, gauge, 254 barrels last 24 hours. Gordon No. 1 making 40 barrels. Well at Shoustown, on Hood farm, reported good for 40 barrels. Grand jury of Butler county recommends that no licenses be granted in Butler county for the sale of intoxicating liquors.

March 5. Market depressed and quiet; opened at 79⅝c and closed at 79⅜c. Carrying rates flat to 50 cents. Kane Oil Company's No. 2, lot 424, strikes sand and makes 125 barrels first 12 hours. Sensation in Bradford over arrest of Horatio King and Thomas Christie, charged with the embezzlement of $60,000 from the First National Bank, and using funds to speculate in oil. Smith farm well, Washington, 294 barrels. Thayer well, 252 barrels. Mulholland & McKeever well, 3 to 5 feet in Gordon sand, without improvement. Union Oil Company's well, on McGovern farm, tubed and pumping 40 barrels. Anchor No. 8, Kinzua Village, strikes sand and shows for a gasser,

March 6. Market without special feature; opened at 79½c and closed firm at 79⅝c bid. Junction Hotel, at Irvineton, with D., A. V. & P. R. R. ticket office, etc., destroyed by fire. Bull wheel at Craig & Cappean's No. 9, Kane, climbs the derrick, and Frank Lowery, the driller, receives severe injuries. Kane Oil Company's No. 2, lot 426, 26 feet in sand and makes 150 barrels in 24 hours. Smith & Wilson's No. 2, on Black heir's lands, at Red Valley, in and dry. Belmont Oil Company's No. 1 (Smith farm) well, gauge, 286 barrels. Thayer, (Clark farm) 252 barrels. Davis well two bits in Gantz sand, with no showing of oil. Union Oil Company, on Weirich, 13 feet in Gordon sand, with no oil. Weaver No. 1, making 35 barrels a day from upper sands

March 7. Sunday. House of J. F. Hanman, on Pleasant street, Bradford, destroyed by fire. Loss, $1,000; insurance, $150.

March 8. Market very quiet; opened at 79¼c, three-eighths below closing quotations of Saturday. A few sales were made at 79⅛c, when it firmed up to 79½c and closed at 79¼c bid. Carrying rates—Bradford, flat to 10c; New York, 25 to 50c; Oil City, 45c; Pittsburgh, 50c. Collins well, across the river at Kinzua Village, reported showing large. Shirley & Hochstetter well, at Kane, makes 110 barrels last 24 hours. Total production of field, 1090 barrels from 17 wells. Union Oil Company's No. 2, on lot 425, in the sand and showing large; made 107 barrels first 11 hours. The Columbia Gas Light and Fuel Company petition Oil City Council for permission to bring its gas supply to the city. Wesley Briggs, aged 50 years, killed near Windfall, by a bull wheel at a drilling well. Two women murdered, near Lickingville, in Clarion county; Mrs. Jemima Everhart and her mother, Mrs. Jane Gilfillan. Three hundred dollars cash were stolen. No clue to the murderer. McKeever, Mulholland & Fisk well, at Washington, drilled through Gordon sand without finding oil; is a small producer from the upper sands. Gordon No. 1 declines to 30 barrels.

March 9. Market firmer; opened at 79½c, fell off to 79⅜c, advanced to 80½c and closed at 80c. Carrying rates—Bradford, 15 and 20c; Oil City, 45 and 50c; Pittsburgh, 45c; New York, 55c. Kane wells gauge: Shirley & Hochstetter, 111 barrels; Kane Oil Company, No. 1, 190; No. 2, 150; Union Oil Company, No. 2, 200. Washington gauges: Smith, 278 barrels; Clark, 220; McGovern, 57; Gantz, 40.

March 10. Market opened at 79⅞c, sold up to 80⅜c, and weakened off to 79⅜c, firmed up to 80⅛c and closed at 79⅞c. Well at Brookville, Jefferson county, reported in sand, with derrick boarded up. Raccoon Oil Company's well, on McCoy farm, Shoustown, two bits in the sand and pronounced good for 100 barrels. Union Oil Company's No. 2, on lot 425, Kane, reported doing 200 barrels. Anchor Oil Company's Nos. 8 and 9, on Morrison lands, Kinzua Village, which showed up for heavy gas wells, when drilled into the sand, begin spraying a little oil. The Collins & Morse well, on Weed lands, west side of river, full of oil and the gas pressure weakening. Smith farm well, Washington, gauges 293, and the Thayer (Clark farm) well, 216 barrels. McJunkin No. 2, and Gibson No. 1, in the Reibold district, Butler county, both down and dry. First shipment of oil from Shoustown, over the P. & W. R. R., to Pittsburgh. Oil piped from Hood well, through Holdship & Irwin pipe line, to Shamopin Station.

March 11. Market opened firm at 80c and advanced to 80⅜c, the highest price of the day. Upon the report that the Pew & Emerson well, at Washington, was flowing at 1000-barrel gait, it broke to 77⅛c, rallied to

77¾c, fell back to 77⅛c, advanced to 79c and closed at 78½c. Union Oil Company's No. 2, on 425, Kane, actual gauge for 24 hours, 120 barrels. Pew & Emerson well, on Manifold farm, Washiugton, strikes a heavy vein of oil at a depth of 1450 feet, and starts flowing at the rate of 600 to 800 barrels a day. Mulholland & McKeever, pumping 30 barrels a day. Another fire at Renfrew, Butler county; three buildings destroyed. Loss, $4,000. The wooden school house, ou Cougress street, Bradford, destroyed by fire. Three hundred children march out in an orderly manner and none are injured. Loss, $14,000; insurance, $10,500. John Bowser, aged 65 years, an old resident of Oil City, killed by a N. Y., P. & O. R. R. train, near the junction with the L. S. & M. S. railway, at that place. Patrick Ryan, a U. P. L. gauger, struck by a freight train, near Clarendon, and seriously injured. Columbia Gas Company apply for admission to Titusville.

March 12. Market opened weak at 78¼c, sold down to 77¼c and closed at 77⅜c. Carrying rates—Bradford, 25 to 30c; New York and Oil City, 40c; Pittsburgh, 45c. Union Oil Company's No. 2, on 425, Kane, gauges 95 barrels. Hess, No. 2, Washington, strikes pay streak in Gordon sand and starts up at 4 barrels an hour. Pew & Emerson well, on Manifold, averages 28 barrels an hour for three hours, and shows signs of weakening. Smith farm well gauged 288 barrels last 24 hours. Christie and King, the defaulting bank clerks of the First National Bank, with their broker, Charles R. Huntley, who was arrested as an accessory, have an examination before United States Commissioner Chapuan and are discharged.

March 13. Market still very weak over the discouraging news from Shoustown, Washington, etc.; opened at 77⅜c, and sold off to 76¾c, rallied to 78¼c and closed with sales at 78⅛c. Craig & Cappeau's No. 9, Kane, drilling through the sand and makes 125 barrels in 24 hours. Murphy & Parson's well, on lot 424, 19 feet in sand and showing nothing but gas. Union No. 2, lot 425, gauges 98 barrels. Manifold well, Washington, averaged 17 barrels an hour for 17 hours, and then dropped off to 12 barrels an hour. Mrs. Mary Wileman, of South Valley, is convicted of the poisoning of her husband with arsenic, on the 18th of September, 1885, and sentenced by Judge Childs to be hanged April 30. Thomas Casey, a boiler maker, of Oil City, found dead on the A. V. R. R. track about seven miles above Emlenton.

March 14. Sunday. Manifold well, Washington, gauges 11½ barrels an hour at 4 p. m. James Fitzgerald, of Buffalo, attacks W. S. Whittaker, editor of the Franklin *Spectator*, and has his head broken by a brick. Great break in Seaboard Pipe Line, near Unionville, N. Y.; farms deluged with oil and huge bonfires of crude petroleum burning for three days.

March 15. Market fluctuates between 77¾c and 78⅞c; very little interest; opened at 78⅝c and closed at 78½c. Carrying flat at Bradford. Collius & Morse well, on Weed lands, Kinzua Village, pumping 30 barrels. Washington, Manifold well, gauges 222 barrels; Smith, 293; Clark, (Thayer,) 168. Hess No. 2 is 15 feet in Gordon sand and is doing 75 barrels. Mulholland & McKeever, 25 barrels. Uniou, on McGovern, 45 barrels. Weaver No. 1 nearly through Gordon saud with little oil; will make a 10 barrel well from upper sands. Second 30,000-barrel iron tank of Southwest Pipe Line completed at Washington. Eighteen wells at Kane gauge 1186 barrels. Buffalo Common Council after a lengthy debate grant a franchise to the Buffalo Natural Gas Company, by a vote of 23 to 3. John Dempsey, a boiler maker, of Bolivar, N. Y., commits suicide by cutting his throat.

March 16. Market a little stronger; the first sales were at 78⅝c, slumped off to 78⅛c, then rallied to 78¾c and ranged between this price and 78¼c till 2 p. m. It then advanced to 79¼c, declined to 78¾c and closed at 78⅞c bid. Pew & Emerson, on Manifold farm, according to reliable figures, made 870 barrels in the last three days; said to be about 25 feet in sand. Smith well, 290 barrels; Clark, 192 barrels last 24 hours; Gordon, Nos. 1 and 2, 70 barrels daily. Kane, Union No. 2, 120; Craig & Cappeau, No. 9, 140. Captain Fink, a mail carrier, 73 years of age, killed by a train at Kennerdell, on the Allegheny Valley railroad.

March 17. Market opened at 78⅜c, sold down to 77¾c and closed at 77⅞c. Carrying rates 25 to 50c. Pew & Emerson, Manifold farm well, Washington, gauged 186 barrels last 24 hours; Smith well, 267; Clark, 182; Hess, No. 2, 45; Gordon, No. 1, 39. Union Oil Company, No. 5, lot 425, Kane, six feet in sand and made 375 barrels in 24 hours. First use of natural gas for cremating purposes. Remains of Milton Fisher, of Columbus, Ohio, reduced to ashes at Sampson's Natural Gas Crematory, Pittsburgh.

March 18. Market weaker under bearish news from new fields; opened at 77¾c, highest point of day, went down to 76¾c and closed at 76⅞c. Kane Oil Company, No. 5, lot 425, Kane, in sand and showing large. Twenty-two producing wells gauge 1620 barrels. Benton Oil Company's No. 1 well, at Tarkill, Venango county, made 215 barrels first 15 hours. Thirteen wells in the Washington field gauge 913 barrels. Frank Yost, a boy of 14 years, falls from a trestle at East Brady and is killed. While tubing Moore & Co.'s No. 5 well, near Tiona, an explosion of gas occurred which severely injured Jacob Winger, Oscar Winger, William Wark and Elmer Mangel.

March 19. Market quiet; opened at 76⅞c, went up to 77c, and down to 76¼c, rallied to 77⅝c and closed at 77c bid. Union, No. 3, lot 415, Kane, gauges 140; No. 5, 310 barrels. Kane Oil Company's No. 5, 170 barrels in 16 hours. Washington wells, Pew & Euerson, Manifold, 170 barrels: Smith farm well, 298; Thayer, Clark farm well, 215. Terrible explosion of natural gas at the Chartiers Valley Gas Company's well, near Murraysville. Five buildings consumed. William Taylor, his wife and two children, Mrs. Harry Taylor and her three children and Sallie Lacock, dangerously burned. Miss Lacock, two Taylor girls and Mrs. Taylor, afterwards die from their injuries.

March 20. Market opened weak under reports of large well at Tarkill. First sales at 76¾c, sold down to 76⅝c, advanced to 77¼c and closed at 76¾c bid. Smith farm well, Washington, gauged 390 barrels last 24 hours; well has been drilled deeper with good results. Manifold, 216; Clark, 200. Conroy & Johnson well, on the Davis farm, southwest of Gordon, is dry. Gordon, No. 1, shot with twenty quarts, responded with a big flow, and started up at the rate of 108 barrels a day. The 30,000-barrel tank of Southwest Pipe Line, while being tested with water pressure, suddenly collapses. Northwestern Natural Gas Company completes its connection with Meadville, and the city is lighted with natural gas from wells thirty-seven miles away. Meeting of Oil City citizens to discuss the movement for a free bridge over the Allegheny.

March 21. Sunday. Benton Oil Company's well, at Tarkill, flowing 20 barrels an hour; for 24 hours ending

at 3:30 p. m., produced 450 barrels. Standard Oil Company's store house at Duluth, Minn., burns with 700 barrels and 1500 cases of oil. Loss, $12,000.

March 22. Market very quiet; opened at 76¾c and closed at 76⅞c; highest 77¼c, lowest 76⅝c. Carrying rates—Oil City, 20c; Bradford, 30 to 35c; New York and Pittsburgh, 40 to 45c. Smith farm well, Washington, makes 345 barrels last 24 hours, and is again mystified. Manifold well, 192 barrels; Clark, 192; Gordon, No. 1, 100. Kane wells—Union, No. 5, 285 barrels; No. 7, 216; Kane Oil Company, No. 4, 225; Craig & Cappeau, No. 7, 125 barrels. Charles B. Whitehead appointed postmaster at Bradford.

March 23. Market opened stronger with sales at 77¼c, highest point of the day. About 2 p. m. it began to break, sold off to 76c, closing at that figure. Twenty-one producing wells at Kane doing 2163 barrels. Boiler explodes at E. S. Hoyt's saw mill, near Tionesta, seriously injuring E. S. Hoyt, Luke Hoyt and William Perry.

March 24. Market influenced by railroad stocks which are weaker on account of labor troubles in West; opened fairly steady at 76c, advanced to 76⅛c, then to 76⅜c, went down to 75¾c, where it remained until 1:30 p. m., when it tumbled to 74⅝c, rallied to 75c, fell off to 74c, firmed up to 74⅜c and closed at 74c. Union Oil Company's well, on Weirich farm, Washington, through Gordon sand and dry. Smith farm well gauges 428 barrels; Manifold, 200; Thayer, on Clark, 170; Gordon, No. 1, doing 96. Miller & Guffey well, on Cradle factory lot, reaches Gordon sand; no oil nor gas found in upper sands. Union, No. 5, at Kane, 265 barrels; No. 2, 100; No. 3, 130; No. 7, 170. Benton Oil Company, No. 1, at Tarkill, doing 400, and Webb Oil Company, No. 2, 150 barrels a day. Recorder Byerly's residence, at Great Belt, Butler county, destroyed by fire. Loss, $1,200. A new evening daily, *The Mirror*, starts at Warren, Pa.

March 25. Market excited and weaker; opening at 73¾c, sold up to 74c, and off to 73c. Just before the close advanced from 73⅜c to 74⅜c, and rapidly receded to 73⅜c where it closed. Carrying rates 25 to 50c. Coast & Co.'s well, on lot 420, Kane, showing for large well; two feet in sand and making 10-barrel flows every two hours. Washington gauges—Manifold, 192 barrels; Smith, 380; Clark, 186; Gordon, No. 1, 75.

March 26. Market opened at 73¼c, rallied to 73⅜c, and went down to 73c, afterwards bounced up to 74c and closed at 73⅝c. May, Kelley & Grandin's No. 46, at Balltown, reported flowing at a 300 barrel rate. Union Oil Company's No. 4, on 425, Kane, 36 hours' old, made 192 barrels last 24 hours. Miller & Guffey well, (Cradle factory lot,) strikes oil in Gordon sand and makes 12 barrels first hour. Gordon, No. 1, gauged 81 barrels in 24 hours; Clark, No 1, 216; Manifold, 192. Twenty-six producing wells at Kane, gauge 2655 barrels.

March 27. Market opened at 73½c, advanced slowly to 74½c and fell back to 74c, fluctuated between 74c and 74⅝c, with rapid changes and closed at 74⅛c bid, with sales at 74¼c. Scouts report 16 producing wells in Washington gauge 1232 barrels for last 24 hours. Guffy & Miller well, on Cradle factory lot, east of the Montgomery farm well, Washington, makes 152 barrels in 24 hours. Smith farm well gauges 422 barrels; the Clark farm, 200, and Gordon, No. 1, 76. Residence of Wm. Haven, at Mt. Chestnut, five miles west of Butler, takes fire, and Frank Haven, aged 21, after rescuing his brother and three sisters, rushes into the burning building after some valuables and is burned to death. One of the daughters is likewise severely burned

March 28. Sunday. Joseph H. Farrell, aged 28 years, drops dead in the office of the Lloyd House, Bradford. Oil City *Sunday Derrick* stops short after two weeks existence. A little daughter of James Harden, residing near Franklin, while playing around a burning brush heap, ignites her clothing and is burned so badly that death results in a short time.

March 29. Market opened at 74⅝c, a very firm feeling prevailing, and advanced to 75c, weakened to 74⅝c, and vibrated between 74¾c and 74½c up to the last hour, when it became more lively, falling to 74⅜c, rallied to 74½c, then receded to sales at 73⅞c, firmed up to sales at 74c, slumped off to 73⅝c, closing at that price bid and sales at 73¾c. Carrying rates—Bradford, New York and Pittsburgh, 50c; Oil City, 25 and 30c. Miller & Guffey well, on Cradle factory lot, Washington, made 192 barrels last 24 hours; Smith farm well, 415; Manifold, 120; Clark, 192. Coast & Son, on Weirich, in stray sand and flowing oil. Kane wells—Coast, No. 1, on 420, 290 barrels; Kane Oil Company's No. 4, on 426, 310; Union, No. 5, on 425, 285. Union, No. 1, on 419, strikes sand and makes 114 barrels first 13 hours.

March 30. Market opened at 73⅝c, sold off to 73⅜c, reacted to 73⅝c and settled at 73½c for some time. About 1 p. m. it broke to 73¼c, reacted to 73⅜c and then slumped off to 72c. It finally broke to 71½c, reacted to 71⅞c, weakened and closed at 71¼c bid. Union Oil Company's No. 1, on lot 419, Kane, makes 230 barrels first 24 hours. Washington well gauges—Smith farm, 447 barrels; Thayer, on Clark, 144; Miller & Guffey, 168; Manifold, 152. Weaver, No. 1, made 28 barrels last 24 hours. Sutton well, on Kersting farm, southeast of Thorn Creek, reported showing for 100 barrels.

March 31. Market opened at 71c, firmed up to 72c, then to 72⅜c, broke to 71⅝c, reacted to 72½c, sold off to 72c and closed at 72¼c bid. Carrying rates—Bradford, New York and Pittsburgh, 50 to 55c; Oil City, 25c. Thirty wells at Kane produce 2995 barrels of oil last 24 hours. Washington wells—Smith, 400 barrels; Clark, No. 1, 180; Manifold, 140; Miller & Guffey, 140; Gordon, No. 1, 90; Hess, 16; Gantz, 35. Gantz produced 558 barrels in past 16 days. Great fall of rain swells the streams and floods Warren flats so that trains are very much delayed.

A Unique Cyclopedia.

An extremely valuable Cyclopedia, and of very great popular interest is Alden's *Cyclopedia of Universal Literature*, Volume II. of which is just published. Novel in plan, and novel in form, at once beautiful and convenient, and at a price low even compared with Mr. Alden's always low prices, this volume gives in its nearly 500 pages biographical sketches of one hundred and eleven prominent authors, with characteristic selections from their writings. The literary and mechanical workmanship are both of a high order. The work is really one that ought to find a place in every home library; it offers a fund of entertainment and instruction that will prove well-nigh inexhaustible. The price, only 60 cents a volume, makes its possession possible even to every school boy. The work is published also in parts of 160 pages each (exchangeable at any time for bound volumes), which are sent post-paid for 15 cents each. Every reader of this notice ought to get at least a specimen part for examination. John B. Alden, publisher, New York; Brennan & Davis, agents in this city.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO MARCH 31, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146.587	8,810	------	155,397	5,180
December	98,582	17,342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,353	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,546	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87,193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107.514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67,883	151,913	4,900
September	19,590	64,648	63,453	147,691	4.923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25,469	62,262	2,224
March	11,558	23,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
Total Mch.31 '86	3,530,635	2,526,729	2,029,919	8,087,283	5,651

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district up to March 31, 1886. Cherry Grove has produced 3,530,635 barrels. Cooper 2,526,729, and Balltown 2,029,919 barrels. The daily average runs from the three fields during March were 2,065 barrels, an increase of 132 barrels over the February figures.

The daily average runs from the Cooper and Henry's Mills section for March were 653 barrels, for February 571 barrels, for January 623 barrels, for December 749 barrels, for November 707 barrels, for October 777 barrels, for September 918 barrels, and for August 923 barrels.

The Balltown field had a daily average of 1059 barrels in March 1056 barrels in February, 1063 barrels in January, 1182 barrels in December, 1030 barrels in November, 925 barrels in October. Cherry Grove averaged 353 barrels in March, 305 barrels in February, 306 barrels in January, 442 barrels in December, 303 barrels in November and 428 barrels during October.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to March 31, 1886, inclusive, has been 8,087,283 barrels, a total daily average of 5,651 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average		Cogley. Runs.	Daily Average.
April	25,325	844			
May	32,885	1,061			
June	29,070	969			
July	27,545	889			
August	26,134	843			
Septemb er	79,324	2,644			
October	187,068	6,034			
November	284,806	9,493			
December	270,644	8,730			
January, 1885	192,180	6,199			
February	205,774	7,349			
March	224,398	7,239			
April	280,005	9,333			
May	232,138	7,488		3,927	127
June	105,774	5,905		18,266	609
July	119,531	3,856		37,848	1,220
August	70,318	2,268		65,570	2,115
September	60,637	2,021		97,325	3,244
October	58,834	1,898		153,110	4,939
November	44,081	1,469		162,476	5,416
December	44,011	1,420		162,479	5,241
Jannary, 1886	39,933	1,288		138,549	4,469
February	34,094	1,218		111,144	3,970
March	42,430	1,369		119,270	3,847

For the eleven months ending with March 31, the Cogley oil field has produced 1,069,964 barrels of oil, a daily average of 3,344 barrels. Previous to May 15, 1885, Cogley oil was included with the general runs of the old Clarion field. The daily average for March is 123 barrels less than that of February, while February declined 499 barrels a day from the January average, and January showed a decrease of 772 barrels a day when compared with December. The highest daily average for the Cogley field was attained last November, since which time there has been a drop of 1569 barrels a day in the runs. The Thorn Creek and Baldridge runs averaged 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January, 1420 barrels in December, 1469 barrels in November 1898 barrels in October and 2021 barrels in September. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 600 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 31st of March had produced 133,584 barrels; a daily average for 182 days of 734 barrels.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅛	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	-----
May	73½	80¼	81½	70	99⅜	85¼	79⅝	-----
June	68⅜	100¼	81	54½	117¼	68¾	82¼	-----
July	69⅞	101⅛	76⅛	57⅝	108	63½	96⅜	-----
August	67¼	90¾	78⅔	58⅔	108⅔	81 1-5	100⅜	-----
September	69¼	95½	92¼	71⅓	112½	78	100¾	-----
October	88⅛	96¾	92¾	93⅝	111⅛	71	105½	-----
November	105⅜	91¼	82⅓	114¾	114 4-5	72½	104⅜	-----
December	113¼	92⅜	83¾	95¼	114⅓	74⅜	89⅝	-----

THE American Tube and Iron Company, of Middletown, Pa., intend building new works at Youngstown, O., for the manufacture of wrought iron pipe and boiler tubes of all kinds, and expect to be running by July 1st. Siemen's furnaces will be used, but they can be easily altered so as to put in natural gas, which is expected there within the next six months.

Crude Market for March.

The market during the past month has ruled dull and sluggish, fluctuating within narrow limits from day to day, with the general public apparently well disposed to leave the Exchanges to do all the trading with no extraneous interference. The business as shown by the clearances has been light with no expectation of a change for the better, until the Kane, Washington and Shoustown fields are more thoroughly defined. With the outside public no longer eager to dabble in the greasy product, and the preponderance of sentiment, leaning toward the bear side, values have tended downward all the month. Predictions of still lower prices have been plentiful, and reasons therefor so abundant that the hidden cause that keeps the price above the seventy cent point is the source of considerable wonderment. A sudden limitation to the Kane field on the northward, a dry hole or two at Shoustown, and the unexpected in the shape of several light wells at Washington, united with the prevailing condition of runs and shipments, might bring about a changed condition of circumstances that would start the sluggish market on the up track, with a rush that the bear talk of the past four months would be powerless to stop.

The month begun with crude oil at 78⅞ to 79c, and closed with the fractions at 72¼ to 72½c. The highest point was attained on the 3d, 9th and 11th of the month, when 80½c was the ruling quotation for a short time. The lowest was noted on the 31st, when the price touched 71c at Bradford and New York.

The range of prices for March was 9½ cents as compared with 9⅞ cents in February, 10½ cents in January, 8⅜ cents in December, 23⅞ cents in November and 12½ cents in October. The average price on the floor of the Bradford Exchange was 77⅛ cents, against 80 cents in February, 88¼ in January, 89⅝ in December, 104⅜ in November and 105½ in October. The average price for March one year ago was 80⅜ cents.

THE CLEARANCES.

	March. Barrels.	February. Barrels.
Bradford Oil Exchange	36,788,000	53,902,000
Oil City "	85,699,000	105,424,000
New York Consolidated Exchange	179,569,000	292,927,000
Pittsburgh Petroleum Exchange	63,440,000	83,288,000
Philadelphia Oil Exchange	15,164,000	23,567,000
Total	380,651,000	559,108,000

The Refined Market.

The tendency of the refined market has been downward, while the trading, though moderate in amount, has been uniform and an improvement on what it was during the corresponding season of last year. No material advance is looked for, on account of the necessity of meeting the competition of Russian oil in Europe. "As long as the price is kept at the present low standard, the Russian article can not make much headway in the markets of the old world." Quotations are one-half cent per gallon less than at this time last year, while the average price of crude is three and one-fourth cents less than the average price in March, 1885.

A prominent refiner, in discussing the situation, says: "Forward deliveries are a trifle steadier in several of the European markets, but the demand is principally confined to supplying orders for May and June deliveries. At present prices American oil will not find a competitor in Western Europe this year, but the preparations for the delivery of Russian oil in Germany, Austria, Italy and the United Kingdom have been so considerable that an advance of 1@2c per gallon on refined would reduce the consumption of the American article. Exporters here are not slow to admit that if the Russian article is to be met, that ocean transportation must be reduced to the lowest possible limit. With this end in view, it is stated on what appears to be good authority that a number of steamers are being prepared in England for the purpose of transporting American oil in bulk to Europe. There are now regularly engaged in the trade, between here and Europe, two bulk crude and two bulk refined vessels. On account of the reduction in insurance, stowage and inspection charges, the greater quantity carried in bulk than in packages, the quicker time made between ports, as well as in loading and discharging, oil can be carried in bulk one cent per gallon cheaper than in packages. Two vessels are now loading crude in bulk at Philadelphia. It is a growing practice."

The home trade in refined has been moderate. Quotations are 7⅜ and 8⅞c. for 110° test, 8 to 9¼c. for 120° test, 8½ to 9⅛c. for 130° test, 9c. for N. Y. State test and 10½c. for 150° test, water white. Naphtha is firm at 8¼c. for prime city. Refined in cases is in active demand at quotations of 8½ to 9⅝c., according to brand. The clearances for March in this class of goods to China and the East amounts to 1,458,609 cases, an increase of 457,673 cases over the same month in 1885. The total clearances up to March 31st are 3,758,130 cases, an increase of 976,563 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 31st of March, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	1,337,688	680,811
JAPAN	299,992	455,880
INDIA	1,037,839	1,138,427
JAVA, SINGAPORE, ETC.	1,082,611	506,440
Total March 31	3,758,130	2,781,567
Total February 28	2,299,521	1,780,631
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	3,758,130	2,781,567

REFINED QUOTATIONS FOR MARCH.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	7½	7⅜	7⅜	6½	6.90	19
2	7½	7⅜	7⅜	6¼	6.95	18½
3	7½	7⅜	7⅜	6¼	6.90	18¾
4	7½	7⅜	7⅜	6¼	6.90	18¾
5	7½	7⅜	7⅜	6¼	6.85	18⅜
6	7½	7⅜	7⅜	6¼	6.85	17⅜
7						
8	7½	7⅜	7⅜	6¼	6.85	17⅜
9	7½	7⅜	7⅜	6¼	6.85	17⅜
10	7½	7⅜	7⅜	6⅛	6.75	17¼
11	7½	7⅜	7⅜	6⅛	6.75	17¼
12	7⅜	7⅛	7⅛	6⅛	6.75	17⅛
13	7⅜	7⅛	7⅛	6⅛	6.75	17⅛
14						
15	7⅜	7⅛	7⅛	6⅛	6.75	17¼
16	7⅜	7⅛	7⅛	6⅛	6.75	17
17	7⅜	7⅛	7⅛	6⅛	6.75	16⅞
18	7⅜	7⅛	7⅛	6⅛	6.70	16¾
19	7⅜	7⅛	7⅛	6⅛	6.70	16¾
20	7½	7⅛	7⅛	6⅛	6.65	16¾
21						
22	7½	7¼	7⅜	6⅛	6.70	16¾
23	7⅜	7⅛	7¼	6	6.65	16¾
24	7⅜	7⅛	7¼	6	6.65	16⅝
25	7⅜	7⅛	7¼	6	6.60	16⅝
26	7⅜	7⅛	7¼	6	6.60	16⅝
27	7⅜	7⅛	7¼	6	6.60	16¼
28						
29	7½	7¼	7¼	6	6.60	16½
30	7½	7¼	7¼	6	6.60	16½
31	7¼	7⅛	7⅛	6	6.60	16¼

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	Mar. 20, 1886. Barrels.	Feb. 20, 1886. Barrels.
Seven Continental Ports	709,400	685,445
London	133,021	167,608
Trieste	11,291	13,783
Total Stocks afloat and ashore	853,712	866,836
Decrease in stocks since February 20	13,124	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS MARCH 20, 1886.

PORTS.	Stocks week ending Mar. 20.		Stocks afloat week ending Mar. 20.		Loading. Week ending Mar. 20.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	40,086	79,221	55,037	45,300	16,000	8,500	111,123	133,021	330,414	526,391	510,520	549,070
Trieste	21,571	2,200	2,000	9,091	- -	------	23,571	11,291	------	------	------	------
Bremen	373,191	91,205	48,331	50,971	25,500	29,600	447,022	171,776	487,366	402,333	845,555	759,198
Hamburg	57,317	9,855	55,990	117,396	36,100	49,600	149,407	176,851	735,581	631,727	853,008	802,714
Antwerp	60,813	30,235	43,927	111,352	48,100	47,700	152,840	189,287	771,008	693,565	875,488	774,747
Rotterdam	32,409	13,315	6,454	46,417	18,000	12,000	56,863	70,732	160,502	310,483	190,938	366,105
Amsterdam	24,675	16,980	36,048	33,501	--- --	15,500	60,723	65,981	178,450	202,174	194,711	312,565
Stettin	15,477	9,746	8,441	12,226	5,000	5,000	28,918	26,972	209,830	226,743	232,000	275,409
Danzig	4,530	7,801	2,642	------	------	------	7,172	7,801	66,088	58,858	70,239	66,321
Total	568,412	179,137	201,833	370,863	132,700	159,400	902,945	709,400	2,608,825	2,525,883	3,261,939	3,257,059

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	923,792	1,082,320	568,412	179,137
Total afloat, " "	367,792	173,822	201,833	370,863
Total loading	88,400	136,100	132,700	159,400
Total	1,329,984	1,392,242	902,945	709,400
Afloat and loading for direct Continental Ports	77,700	13,000	----	24,800
" " " Baltic Sea, exclusive Stettin and Danzig	43,700	13,600	5,200	18,600
" " " Total Continental Ports	1,451,384	1,418,842	908,145	752,800
" " " Total London	296,761	329,696	111,123	133,021
" " " English harbors, exclusive London	88,100	11,500	39,500	20,300
Grand total	1,836,245	1,760,038	1,058,768	906,121

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, FEBRUARY, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., MAR. 9, 1886.

CUSTOMS DISTRICTS.	MINER'L. CRUDE		NAPHTHAS.		ILLUMINATING.		LUBRICATING & PARAFINE OILS.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	--------	-------	300	75	222,826	27,077	16,101	2,650	------	------	239,227	29,802
New York, N. Y	3,592,790	269,434	205,689	17,700	25,695,374	2,181,851	849,825	146,124	1,680	135	30,345,358	2,615,244
Philadelphia, Pa	491,306	31,961	169,694	12,019	5,652,997	456,771	14,547	2,087	------	------	6,328,544	502,838
Baltimore, Md	--------	-------	--------	-------	1,311,638	101,420	--------	-------	207,522	10,157	1,519,160	111,577
San Francisco, Cal	--------	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	--------
All other districts	--------	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	--------
Total for Feb'y, 1886	4,084,096	301,395	375,683	29,794	32,882,835	2,767,119	880,473	150,861	209,202	10,292	38,432,289	3,259,461
Total for Feb'y, 1885	3,879,326	269,688	572,562	46,696	28,528,588	2,447,925	1,058,574	211,682	------	------	34,039,050	2,975,991
Total for 8 months ending Feb. 28 1886	56,457,006	14233,296	9,407,820	732,012	305,189,604	27,038,484	7,763,084	1,570,951	2,550,324	150,386	381,367,838	33,725,129
Total for 8 months ending Feb. 28, 1885	58,731,490	4,256,464	11,331,854	922,188	304,131,416	26,614,384	8,183,771	1.687,098	3,454,836	189,875	385,833,367	33,670,009

CRUDE QUOTATIONS FOR MARCH, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
M 1	79	79⅛	78⅜	78½	78⅞	79⅜	78⅜	78⅝	79	79¼	78⅜	78½	79	79¼	78½	78½
T 2	78⅜	79⅛	78¼	78⅞	78½	70⅜	78¼	78⅞	78¼	79⅜	78¼	79⅛	78¼	79¼	78¼	78⅞
W 3	79	80¼	78⅞	78⅞	79⅜	80½	78⅞	78⅞	79⅛	80⅜	78¾	79	79¼	80⅜	78⅞	78⅞
T 4	79	79⅞	78⅞	79¾	79¼	79⅞	78⅞	79¾	79	79⅞	78⅞	79¾	79⅛	79¾	78⅞	79¾
F 5	79⅜	79⅞	79⅜	79⅜	79⅜	80	79¼	79¼	79¾	80	79⅜	79⅜	79½	79⅞	79⅜	79⅜
S 6	79⅜	79⅜	79	79⅜	79⅛	79⅜	78⅞	79⅜	79⅜	79⅜	78⅞	79½	79¼	79⅜	78⅞	79¼
M 8	79⅛	79½	79⅛	79¼	79	79⅜	78⅞	79¼	79	79⅜	78¾	79¼	79	79½	79	79¼
T 9	79⅜	80½	79⅜	80	79⅜	80½	79⅜	80	79½	80½	79½	80	79½	80⅜	79½	80
W 10	79⅞	80⅜	79½	79⅞	80¼	80⅜	79½	80	80	80⅜	79½	80	80¼	80⅜	79½	80⅛
T 11	80	80⅜	77⅛	78½	80⅛	80½	77¼	78¼	80	80½	77¼	78½	80⅛	80½	77⅞	78½
F 12	78¼	78⅜	77¼	77⅜	77½	78⅜	77¼	77⅜	77¾	78½	77¼	77⅜	77⅜	78¼	77⅜	77¾
S 13	77⅜	78¼	76¾	78⅛	77	78¼	76¾	78	77	78¼	76½	78	77	78¼	76⅞	77⅞
M 15	78⅝	78⅞	77¾	78½	78½	78⅜	77⅞	78⅜	78½	78¾	77¾	78½	78½	78⅜	77⅞	78½
T 16	78½	79¼	78⅛	78⅞	78⅜	79⅛	78⅛	78⅞	78⅜	79⅛	78	78¾	78¼	79	78⅛	78⅞
W 17	78⅜	78½	77¾	77⅞	78⅜	78⅞	77⅞	78⅞	78¼	78½	77¾	77⅞	78½	78½	77⅞	77⅞
T 18	77¾	77¾	76⅞	76⅞	77½	77¾	77	77	77¾	77¾	77	77⅛	77¾	77¾	77	77⅛
F 19	76⅞	77⅜	76¼	77	77	77¼	76¼	77	76⅝	77¾	76¼	77	76¾	77¼	76⅜	76⅛
S 20	76¾	77¼	76⅝	76¾	76⅜	77½	76⅝	76⅞	77	77⅜	76⅝	76⅞	76⅞	77⅜	76⅝	77
M 22	76¾	77¼	76⅝	76⅞	76⅝	77¼	76⅝	76⅞	76⅞	77¼	76¾	76⅞	76¾	77¼	76¾	76¾
T 23	77¼	77¼	76	76⅛	77	77⅜	75⅞	76⅛	77⅛	77⅜	76	76⅛	77	77¼	76	76⅛
W 24	76	76⅜	74	74	76½	76½	74	74	76⅛	76⅜	74	74	76	76⅜	74	74
T 25	73¾	74⅜	73	73⅜	74	74½	73	73⅜	74	74½	73	73½	73¾	74½	73⅛	73½
F 26	73⅜	74	73	73⅝	73	74	73	73⅝	73¼	74	73	73⅝	73½	73⅞	73	73⅝
S 27	73½	74⅝	73⅜	74⅛	73⅜	74¾	73¼	74⅜	73⅝	74½	73⅜	74⅜	73½	74⅝	73⅜	74⅜
M 29	74⅝	75	73⅝	73¾	74¾	75¼	73⅞	73⅞	74⅞	75⅛	73¾	73¾	74⅞	75⅛	73¾	73⅞
T 30	73⅝	73⅝	71¼	71¼	73½	73⅝	71¼	71⅜	73⅛	73¾	71¼	71⅜	73½	73⅝	71⅜	71⅜
W 31	71	72⅛	71	72¼	71¾	72¾	71⅛	72⅜	71	72⅛	71	72½	71¾	72½	71¼	72¾

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ANTICLINALS AND NATURAL GAS.

BY H. M. CHANCE.*

IN an article published in the March number of THE PETROLEUM AGE, Prof. I. C. White presents what appears to be a strong array of facts, in support of the anticlinal theory. This is reinforced by the map accompanying the article. To the average reader this map will doubtless appear to be an absolute demonstration of every statement made in that article. To the engineer familiar with the geography of Pennsylvania it is so palpably lacking in all those details necessary to properly locate the gas areas, and is moreover drawn on so small a scale that it can have little or no weight; to the geologist familiar with the anticlinals of this part of the State, it is so loaded with innovations, additions and alterations of the work of the geological survey, (on which it is based, and without which its construction would have been impossible), that it can only be considered as a pictoral representation of the author's personal views.

To be of value as proving or disproving the occurrence of gas wells along anticlinal axes to their exclusion in other localities, such a map can be constructed in only one way, viz.: by marking down the gas areas and then drawing the anticlinal lines, (or vice versa), the latter being located independently of the former. The scale of this map and its lack of details preclude this method, for in attempting to locate a gas well it is impossible to find any points that will enable us to do this correctly, and the axes being so close together it is impossible to tell whether the dot should be placed on an anticlinal or on a synclinal.

The gas wells shown by the map must therefore have been located by Prof. White, from his knowledge, (either personal or by proxy), of the location of the wells with reference to the anticlinals. A map so constructed cannot be offered as evidence, being simply another expression of the author's opinion.

But even this map does not prove the claims made by the author, for several wells from their known location to the anticlinals had to be located in synclinals, and to explain this and maintain the theory intact a new theory is proposed. Perhaps this is stating the case rather mildly, for Prof. White forces this innovation upon us as an established fact, not advancing it as an hypothesis which may or may not prove true.

I refer to the so-called cross-cut anticlinals. Mr. White locates five† such rolls on his map; one of these, the Kinzua-Emporium cross-cut, was located by Mr. Ashburner some years ago, but I do not know that Mr. Ashburner ever felt entirely satisfied that such a flexure actually existed as a true anticlinal,—and from the very nature of the country it was difficult, if not impossible, to absolutely demonstrate its existence as such,—and it has always been viewed with doubt by a number of the Assistant Geologists familiar with the western part of the State.

Upon data that seem to me entirely insufficient, Prof. White adds five other such "cross-cut" anticlinals. If we accept the existence of these it follows that there are probably many more, and instead of the structure of Western Pennsylvania being a series of nearly parallel anticlinal rolls, these cross-cut anticlinals must cut it up into checker-board work, the black squares representing domes and the white squares representing hollows. It is entirely safe to say that no geologist has ever suspected such a structural paradox in this State, at least, and I confess myself unable to understand how such a state of affairs could possibly exist and escape detection by the Assistant Geologists.

I believe that Prof. White's enthusiasm in the anticlinal cause has led him to grasp too readily this explanation of the occurrence of gas in other than known anticlinal localities, and that he has mistaken the ordinary rise and fall of anticlinals and synclinals along their axial lines for the intersection of "cross-cut" rolls.

This hypothesis of cross-cut anticlinals is entirely unnecessary to explain the changes of dip instanced in that article. It has long been known that all of our anticlinal and synclinal flexures rise and fall from point to point; that an axis may be more prominent at one point than another, and that an axis may frequently die out and shortly be replaced by another generally not in the same line prolonged, but a little to one side or the other. All this has long been known, and is entirely sufficient to account for the phenomena which Prof. White introduces the cross-cut anticlinals to explain.

The occurrence of gas on what Prof. White designates as "*suppressed*" *cross-cut anticlinals*, where no reversal of the dip is claimed, is in itself a refutation of the anticlinal theory as defined by Prof. White.

Since writing the above criticism I have had a conversation with Mr. Ashburner regarding the so-called Kinzua-Emporium cross-cut, and find that Mr. Ashburner's views are substantially as I had supposed, and that he regards the term as a rather unfortunate misnomer, applied at the time in the absence of any better term to indicate a line drawn through points where an offset occurs on the anticlinal axes, and not to indicate a distinct and continuous upheaval, such as is understood when the term "anticlinal" is used.

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† Another such anticlinal is described in the text as intersecting Leechburg and Butler, making six in all.

M. K. McMullen vs. the Penn Bank Directors.

The jury in the case of M. K. McMullen vs. the Penn Bank directors, at Pittsburgh, found for the plaintiff in the sum of $24,628.41. This was an action in deceit, plaintiff claiming $68,000 because the directors had induced him to leave his money in the banks when they knew it was insolvent. The result will open up a number of other cases, involving several hundred thousand dollars, which were waiting on the result in the McMullen suit.

EAST AURORA, N. Y., will sink a well within the corporate limits of the village, and expects to find either salt, gas or oil. Mr. D. D. Flannigan has the contract for drilling.

Sharp line between gas & oil

THE PRODUCING REGION.

At the beginning of March there were 269 new rigs and 367 drilling wells in the entire country, a total of 636. Out of this number 296 wells were completed, which on the last day of the month were estimated to have had an output of 5205 barrels. The number of dry holes was 50, leaving 246 productive wells, with an average yield of a little more than 21 barrels each. During February the entire region completed 230 productive wells and 35 dry holes, and the average of the new wells February 28 was estimated at 14½ barrels. The increased average comes from the large wells at Kane, Washington and Tarkill. At the close of March there were 263 new rigs, 122 old rigs and 413 drilling wells in the New York and Pennsylvania oil producing regions.

ALLEGANY FIELD.

The Allegany field is credited with 35 wells completed during the month recently closed. Seven of the number were unproductive, and of these, two, that of Middaugh & Co., on lot 1, of the northern division of Scio township, and that of W. Duke & Co., in the Shingle House region of Potter county, were of a purely wildcat nature, and beyond the limits of the producing area already defined by the drill. Of the remaining dusters, three were found in the town of Wirt, viz.: S. C. Rhodes, on the John Jordan farm, lot 54; Barton & Co., on the Burdick farm, lot 53, gas; and Knox & Co., on the Finch farm, lot 43, also a gasser: and two in the town of Clarksville, that of Whipple & Davis, on lot 10, and that of the National Transit Company, on lot 12. The 28 productive wells average a little less than 6 barrels apiece. The February wells averaged 6½ barrels. On the 31st of March the monthly count shows 33 new rigs, 38 old rigs and 39 drilling wells in the field, a total of 110, and a net decline of 18 from the February figures. The pipe line runs from the Allegany field averaged 6545 barrels a day in March, 6361 barrels in February and 6235 barrels in January.

THE BRADFORD FIELD.

The great chocolate sand-belt of the producing region still continues to furnish a few locations for the oil producer, who is content to invest his capital on the prospects of moderate profits. But there is none of the old-time territory remaining that made rapid fortunes for the wild crowd of eager lease hunters that thronged the valley of the Tuna and its tributaries a few short years ago. The rock which the drill now penetrates with languid speed, is close and thickly interspersed with slate, and yields up its scant supplies of crude wealth, only after mighty struggles with powerful explosives.

Fifty-one wells were completed in the Bradford field in March, including three dry holes. The productive wells average about 7½ barrels. On the last day of the month there were 40 new rigs, 33 old rigs and 49 drilling wells in the northern oil basin. The count on the last of February showed 31 new rigs, 36 old rigs and 55 drilling wells. The dry holes of the past month were, the venture of D. L. Tait & Co., in Annin township; the Royal Oil Company's experiment on warrant 4907, southwest of the Quintuple, and the test of H. O. Robbins, on the Walb farm, directly west of the city of Bradford.

The Conroy & Johnson well, on the Freeland farm, is reported on good authority to have averaged six barrels a day since it was shot. The owners still wear an imperturbable air of mystery, and in the meanwhile several other parties are making tests in the immediate vicinity which will soon decide the calibre of the surrounding territory. The March pipe line runs from the Bradford field averaged 29,333 barrels a day, as compared with 27,499 barrels in February and 27,966 barrels in January.

WARREN AND FOREST.

But for Kane and Grand Valley the middle field would have proved of a very little importance in swelling the statistics of the report of field operations the past month. Ninety-eight wells were completed, 16 more than in February, and the new production shows an increase of 1407 barrels. The dusters are 12 in number. Seventeen of the new wells are found in the Kane field and average about 100 barrels apiece. On the last day of March there were 97 new rigs, 16 old rigs and 137 drilling wells in the middle field, as contrasted with 87 new rigs, 16 old rigs and 94 drilling wells on the last of February.

KANE.—The new map of the Kane oil field presented in this number of the AGE, gives the location of all wells up to April 10th, and also discloses the fact that the producer is not allowing the spring grass to grow under his feet in urging the drill to protect his lines. Craig & Cappeau had their twenty-third well under way on warrant 3767, and the Union Oil Company were building their twenty-third rig on lot 425. The Kane Oil Company have not lost any time in developing the crude resources of lot 426, and on lot 420 Coast & Thyng are keeping pace with their neighbors in their progressive movement to the north. The best wells which have yet been found are located along the dividing line between lots 425 and 426. Some of the Union Oil Company's wells, on lot 425, have started at 300 barrels. Their No. 1, on the southeastern corner of the lot, was a gasser and showed how sharply the line between gas and oil is defined. The Andrews' well, along the southern boundary line of 384, and between 70 and 80 rods from the southwestern corner, was a disappointment to the owners. They expected a well which would start at 100 barrels, and the gauge of the well gave an average of 16 barrels per day for the first eight days. During March 17 wells were completed in the Kane field, having a new production on the last day of the month of 1650 barrels. The Murphy well, on the southwestern corner of the lot, was a gasser and is reported as the one dry hole in the list. At the close of the month there were 24 new rigs, 5 old ones and 65 wells drilling, a total of 94. The gauge of the field by the scouts, on the 26th of March, gave a production of 2665 barrels, and on the 3d of April 36 wells were producing 2264 barrels. The average daily pipe line runs from the field for March were 1252 barrels, an increase of 817 over the February average. The most important wells now drilling, and which will go a great ways towards determining the shape of the northern end of the field, are those on 345 and 379. Rigs are also up on 340 and 346, but the owners will await results at the neighboring ventures before starting the drill. The Hemlock Oil Company has two wells drilling on 3132, which are too far northeast to attract any great attention, their location being considered more favorable for gas than oil. The Merchants Oil Company is drilling for gas on warrant 3153. The following is the scout's gauge of the Kane field for the twenty-four hours ending April 3d:

Tract. Owner.	Barrels.
419, Union Oil Co., No. 1	197
420, Coast & Thyng, No. 1	242
424, Shirley & Hochstetter, No. 1	80

Tract.	Owner.	Barrels.
425,	Union Oil Co., No. 2	70
425,	" No. 3	96
425,	" No. 4	130
425,	" No. 5	192
425,	" No. 6	160
425,	" No. 7	146
426,	Kane Oil Co., No. 1	145
426,	" No. 2	125
426,	" No. 3	140
426,	" No. 4	200
426,	" No. 5	150
426,	" No. 6	225
3767,	Craig & Cappeau, No. 1	58
3767,	" No. 2	35
3767,	" No. 3	40
3767,	" No. 4	12
3767,	" No. 8	70
3767,	" No 9	90
3767,	" No. 10	120
3767,	" No. 11	120
3767,	C. & C and A. P. Co., No. 1	34
3767,	" No. 2	31
3775,	J. W. Griffith, No. 1	50
3775,	" No 2	85
3775,	Bayne, Fuller & Co., No 1	10
3775,	Reid & Brown, No. 1	5
3775,	McMullin & Simpson, No. 1	4
3775,	P. T. & W. C. Kennedy, No. 1	34
3775,	" No 2	23
3775,	" No. 3	40
3775,	Andrews & Co, No. 1	20
3775,	" No. 2	40
3775,	Kane Oil Co., No. 2	45

Total wells	36	Production	2264
March 26, total wells	29	Production	2655
March 18, total wells	22	Production	1620

KINZUA VILLAGE.—The Collins & Morse well, on warrant 5563, on the western side of the river, is credited with a daily production of 20 barrels. There is an entire absence of salt water, that is so abundant in the wells on the east side, and the sand is found at a greater depth. The well is supposed to mark the discovery of another small development that will afford a new lease of life to the fading district of Kinzua. The two last wells of the Anchor Oil Company on the northeast are of little value. One is a gasser and the other, though a profitable producer, is far short of the expectations excited by the grand results from No. 1 and No. 5. T. G. Phillips, one of the most successful operators on the Kinzua flats, is sinking a test well on the Richardson lands, warrant 3724, to the northeast of the Barnsdall failure. At last accounts it was dry in the regular sand and drilling for a deeper. The Hill & Powell wildcat, on warrant 2428, about 800 feet directly south of the Hue duster, at Big Bend, was drilled below all known producing sands and abandoned.

CLARENDON AND TIONA.—The work under way in this portion of the middle field is about the same in amount and character as last month. Forty-one wells were completed with a new production of 255 barrels, and 49 new rigs were up and 40 wells drilling, when the report for March was canvassed. The section in the immediate neighborhood of Tiona Station, is the busiest portion of the district, while the northern end of the field, at Stoneham and Stonehill, is also fairly active. Riddlesperger's last well, on 466, started at 50 barrels, which is a phenomenal rate for this part of the country. Logan, Jamieson & Co. are reaching out for more territory on lot 49, but at last accounts their experiment was showing up very much like their previous failure on lot 41. Captain E. H. Barnum has a well down to the proper depth, on lot 488, northwest of Stoneham, to show oil, if there is any there. Several good wells were opened up the past month, on lot 284, the extreme southern portion of the Tiona development.

COOPER AND BALLTOWN.—The Cooper district has become the quietest spot in the field, while Balltown, which has been drilled more slowly, still keeps her production above 1000 barrels a day. The southwest borders of the latter district have been extended the past month by a brace of important strikes. May, Kelley & Grandin's No. 46, which started at 300 barrels, and is rated at a 50-barrel producer, is within 200 feet of the southwest border of warrant 5215. While the ventures of James Welsh, on 5214, the warrant adjacent, which have been regularly reported as dry holes, are said to furnish indications that there is room beyond, on a narrow line, for still further exploitation with the centre bitt. Welsh pulled the casing at his last well, and it is an open secret that an excellent showing was made, but at this writing has not been put in producing condition. The pipe line runs from the Cooper and Henry's Mills field were 653, and from the Balltown field 1059 barrels a day in March.

GRAND VALLEY.—Recent developments in this part of Warren county have opened up a stretch of productive territory, extending from Grand Valley to Selkirk, a distance of over five miles. The old wells on the northeast, which have been producing oil for many years, pointed out the discovery of much better ones on the southwest. The drilling is shallow, and the presence of salt water renders the use of the sucker-rod, at most of the wells, imperative. L. B. Wood & Co. control the greater part of the available territory, while a host of smaller operators will make the drill dance to lively music the coming summer. The field thus far is shown to be rich in spots; wells that start at sixty and seventy barrels having been found in close proximity to two and six barrel producers. W. W. Benedict & Co. and Sam Stewart are credited with several of the first-class, while Farrell secured one of the latter class further to the southwest. Miller & Crippen's wells are between the Selkirk part of the field and the Grand Valley portion. They are credited with having started at above 100 barrels apiece when shot. G. P. Kepler, one of the pioneers of the field, is preparing for a vigorous campaign on his purchase of the Emerson lands. The district is credited with 10,000 barrels production in March.

ELK COUNTY.—A little prospecting is on foot in Elk county, the Kane development having attracted the attention of the wildcatter to the possibilities of crude in the northwestern section of the county, and two wells have recently been started, one on warrant 2948 and the other on 4854.

THE LOWER COUNTRY.

The lower country furnished about 45 per cent. of the new production for March, having completed 84 producing wells and 28 dusters, as compared with 80 producers and 19 dry holes in February. The record for the last of March indicates a decrease of 7 new rigs and an increase of 13 drilling wells.

VENANGO.—Red Valley and Tarkill continue the centers of active operations in Venango county. The first named reached the summit of its greatness during the "Ides of March," unless a fresh area of productive territory to the south or west should be discovered on an unexpected line. The pool has proved a peculiar one, and while it has been profitable to the major part of the operators, a goodly number of dry holes, has rendered it expensive to the ambitious ones, who have been anxious to extend its limits. Since the first of the month the Forest Oil Company has completed a dry hole on the Furnace property, and Hulings Bros. have developed a similar result on the Shower's farm. The Sheasly & Grant well, on the L. Wick tract, adjoining the Forest's property, is also dry. These wells are on the southwest of the pool, and practically condemn a

large amount of territory that was considered of prospective value. W. H. H. Piper has an experiment drilling on the Philadelphia and Boston Oil Company's tract, and I. S. Gibson has a venture on the George Gearheart farm, which is generally regarded as worthless. Save for a small spur to the northeast, which is limited on two sides by a line of dusters, and has a dry hole directly in its pathway, the Red Valley pool has no available territory in sight, and another month must witness a decided slackening in active operations. The richest of the productive area is already thickly spotted with wells, and a rapid decline will soon be in order. The pipe line runs from this district averaged 1017 barrels a day in February and 1206 in March. The total runs have been 133,583 barrels for 182 days ending with the 31st of March.

The Benton Oil Company's No. 1 well, at Tarkill, fairly divides the honors with anything that Washington county has yet given to the trade. Struck on the 17th of March, it made an ordinary showing for a moderate well, and when fifteen feet in the sand there was only 100 feet of oil in the hole. Deeper drilling, however, revealed its slumbering possibilities, and on the 21st it was flowing at the rate of 20 barrels an hour. Packed and tubed on the 3d of April, its record for twenty-two hours, ending at noon the following day, was 385 barrels. On the 7th instant its gross yield was 396 barrels, and for the first nineteen days it passed to its credit on the pipe line books the neat amount of 6569 barrels of oil. The Benton well is located directly east of the Webb Oil Company's (Taylor, Torrey & Murphy) No. 7, on the W. H. Hill farm, which had been producing at something over 100 barrels a day. The Tarkill pool appears to be effectually shut in on all sides by dusters and gas wells, and there is room for a development of but moderate area. On the northeast are the Speechley gas wells and a cordon of smaller gassers drilled by the Oil City Fuel Supply Company. The latter, nearly forty in number, were put down to the Tarkill sand, and many of them were drilled completely through it. In fact the Fuel Company obtained most of the gas used at Oil City at one time from this sand. The old development at Gas City lies to the southeast, and several dusters, drilled by W. C. Baum, mark out the southwest extremity. The west is equally well defined, and Tarkill can be already written down as a pool of moderate area, and great richness. The runs from this district averaged 427 barrels a day in March. Cornwall & Hasson have completed two wells on the Lawley farm, since the first of the month, directly north of the Benton No. 1, both of which are small. Benton No. 2, one location north of No. 1, and between the large well and the Cornwall & Hasson wells, has also been drilled through the sand with comparatively insignificant results. At the close of the month there were eight wells in this district producing oil. The Webb Oil Company owned seven of these and the Benton Oil Company one.

Old Venango helped swell the total of new production for March, by supplying 48 new wells, whose aggregate yield is placed at 1016 barrels. In work at the close of the month the count shows 46 rigs, new and old, and 39 drilling wells, almost a counterpart of the report at the close of February, which enumerated 41 rigs and 45 drilling wells, a total of 86.

Clarion.—At the close of the month of March the Cogley oil field was isolated from the oil world by a band of mud five miles in width. It then required four horses to haul a light spring wagon between Edenburg and Fern City, the banner town of the Cogley field. The Cogley district affords no features which call for extended comment. Its production is steadily declining; its volume of new work constantly shrinking. As has been noted before in these pages the Cogley section is practically drilled over, with the exception of a small amount of territory on the ragged edges. At the northeastern end of the district Col. Carter completed a well on the Rickenbrode, which had a yield of 50 barrels at the close of the month. Maxwell & Co. ventured too far to the westward on the Findley property and found a dry hole. John Deitrich & Co. drilled their dry hole on the Snively farm to the Speechley sand, which was struck at a depth of 1880 feet. The sand is reported to have had a thickness of 40 feet and when the well was shut in its gas pressure would run up to 100 pounds. A number of the citizens of Edenburg drilled an old well on the Best farm, within the borough limits, below the level of the Speechley sand, without finding gas or oil. At this well the Clarion sand was struck at a depth of 1030 feet, and on the 25th of March the drill was cutting rock 2100 feet below the surface. There were 30 wells finished in Clarion county in March and 20 of these were in the Cogley field. Panton found a duster on the Panton farm on the hill above Foxburg. In the suburbs of the old town of Shippenville Pye completed a well on the Lehigh tract, which is rated at 30 barrels. The well of McGrew Bros. at Lucinda furnace was a failure, and Furness, Laney & Co. also found a dry hole in the Paint Creek section on the Black farm. On the Smith farm Smith & Hahn and Smith & Wagner added wells to the producing list, which are rated from 12 to 15 barrels. The Blyson Run well was cased and drilling at a depth of about 500 feet on the 1st of April. It found oil in a shallow sand between 300 and 400 feet below the surface.

Butler and Armstrong.—The work of the drill in Butler and Armstrong counties that attracts any attention is confined to two localities—Reibold station, on the P. & W. R. R., southwest of Butler, and the Ort pool, east of Millerstown At the former place three dry holes were completed in March—J. D McJunkin's No. 1 and Root, Johnson & Co.'s test on the McCandless farm and J. B. McJunkin's venture on the Nolshire farm, these failures being west of the pioneer well drilled by Painter Bros. Mr. Thomas W. Phillips has concluded to make a test on the Piersol farm, about 100 rods to the east of it. Critchlow & Co. also have a rig up on the J. O. Critchlow farm, adjoining the farm upon which the Phillips well is located. From the present setting which the pioneer wells have if a streak or pool is developed it lies further to the east and extends in a southwesterly direction. The month of April will see a reduction in the volume of new operations in the Ort district east of Millerstown. The Gospel Oil Company's dry hole on the Graham and the Leidecker failure on the Maley farm, over a mile in advance of developments, stand in the way of an extension to the southeast. The wells completed on the Pontius, McKeever, Glenn and other farms ranged in size from 5 to 100 barrels. Showalter Bros.' No. 5 on the McKeever farm, which was expected to start at 100 barrels, proved a light affair and demonstrated that the change from good to light territory was sudden on the western side of the streak. Phillips Bros. continue their search to the east of Thorn Creek for new pools, but thus far their geological endeavors have been rewarded with small wells and dry holes. Another dry hole was found on the Daubenspeck farm in the Martinsburg district. Throughout the district there were 20 wells finished, having on the last day of

March an estimated new production of 504 barrels. Of the whole number of wells completed 6 came in dry. The monthly report showed 20 new rigs, 9 old ones and 48 wells drilling, a total of 77.

WASHINGTON.

The Washington field maintains its reputation for surprises by an occasional addition to the list. The Miller & Guffey well on the Cradle factory lot, 60 rods east of the Montgomery well and 130 rods northwest of the Gantz, astonished the trade by starting at 200 barrels. It was producing 192 barrels March 29th and 140 on the 31st. Its production April 16th was placed above 100 barrels by one of the owners. The Shirls well, one location distant from the Miller & Guffey, was a larger well. Its production for the first 19 hours was 15 barrels per hour. The Union Oil Company's well on the Weirich farm, 100 rods distant from two producing wells, was sunk below all sands and found to be barren of oil. The doubts which lurk about the fates which may fall to the Belmont Oil Company's No. 2 on the Smith farm, the Pew & Emerson, the Wylie, the Minhall, Smithman and McKeown wells, all located in the section about the Belmont Oil Company's No. 1, cause speculators to halt before governing their movements by the situation in other fields. On the last day of March the Pew & Emerson well gauged 140 barrels. Hukill & Co. are drilling an important well on the McGowan farm, south of the borough of Washington. The wild-cat wells east and southeast of the field are very important ventures. At the present time rig building in the district is at a standstill.

SHOUSTOWN, ETC.

The Raccoon Oil Company's well, on the Wallace farm, is two miles in advance of the wells on the Hood and the McCoy farms, and demonstrates the existence of a field about as large as the Cogley Run district. From the well on the Economite tract, on the north side of the Ohio river to the Wallace well, the distance is four miles. At this writing, April 17th, there is some doubt about the size of the well on the Wallace farm. It is rated as low as 25 barrels daily, and as high as 150 barrels. The sand, according to the reports of the owners, was tapped on the evening of April 14th, and the well filled up and flowed during the night. Up to Saturday morning, April 17th, the tankage at the well had not been completed and no gauge of its producing capacity had been made. They expect to drill the well deeper on Monday, April 19th, when the judgment of the owners, Pittsburgh bulls and oil scouts, will be put to the test. As demonstrated by the work of the drill thus far, the belt is running in a southwesterly direction, and the sand thins out rapidly to the east. The well on the McCartney farm, drilled by Lovell & Co., was a failure, and the sand, which was reached at a depth of 1550 feet, had a thickness of eighteen inches. Galey & Co.'s well, on the McCain lot, east of the beltline, passing through the Hood, is a small producer. The Raccoon Oil Company's well, on the McCoy farm, is a larger producer than the Hood well, and now has a daily yield of about 80 barrels. The Shoustown oil belt is found east of the new Sheffield anticlinal, which Prof. I. C. White outlines, and in this field his theory appears to be vindicated by the centre bit. The Raccoon Oil Company have the lion's share of the territory in sight, and can time the movement of the drill to slow music. Two dry holes were found in the Phillipsburg or Rochester field during March, one was drilled by Ross & Co., and the other by Townsend & Co.

PERSONAL NOTES.

F. H. Newell, of Bradford, Pa., a recent graduate of the Boston School of Technology, delivered a lecture on the evening of April 6th, before the Pompelon Club, on the subject of Local Geology. The lime light was used to good effect, and Mr. Newell succeeded in popularizing a rather dry topic to the delight of an appreciative audience. Mr. Newell is an enthusiast in the broad field of geology, and has already assisted in the survey of Ohio and other scientific explorations.

At a late election in Hazelton, Kansas, Mr. E. B. Peck was elected Mayor, Seymour Peck was made Judge of the town, and H. B. Steck was raised to the dignity of a Councilman. All are excellent young men, widely known in the towns and cities of the oil country.

Mr. George H. Lyon, the well-known civil engineer and surveyor, has opened a branch office in Kane, where he may be found when not in his office at 101 Main street, Bradford.

Mr. J. A. Seymour, for a number of years engineer for the McCalmont Oil Company, has been elected City Engineer of Bradford.

J. C. Tennent, the well-known oil scout, who has worried mystery men more than any other man who has been engaged in the business of scouting, departed April 13, with his family, for Hazelton, Kansas, where he has about 1000 acres of the boundless prairie.

J. M. Guffey has removed his office from the Seventh Avenue Hotel, in Pittsburgh, to an elegant suite of rooms in the Stevens Block, No. 43 Sixth avenue. Mr. John Galey is associated with him in the oil and gas business. In their corps of field and office lieutenants they have a number of gentlemen who have had a large experience in the oil business in the region.

Cyrus Angell, of Richburg, N. Y., passes his time in the Ohio oil and gas towns, where he sells supplies for R. W. Carroll.

SUMMARY of the Statements of the National Transit Company for March and February,

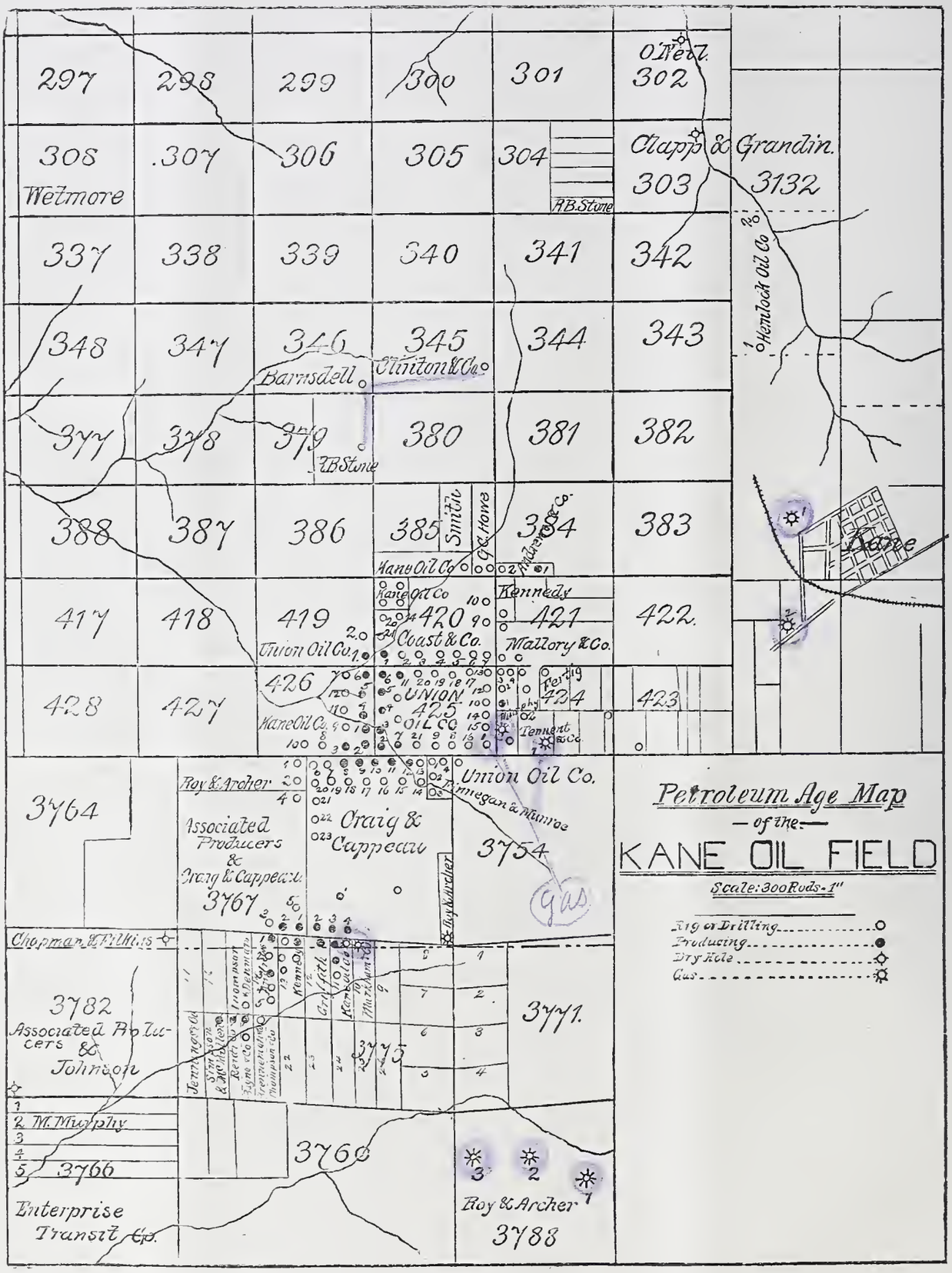
	MARCH. Barrels.	FEBRUARY. Barrels.
Receipts from all sources	1,653,755.25	1,372,166.72
Deliveries	1,809,622 22	1,785,992 52
Gross stocks end of month	34,309,468.61	34,330,633.07
Sediment and surplus	3,001,637.52	2,858,917.43
Total liabilities end of month	31,3 7,831 09	31,471,715.64
Outstanding acceptances	26,686,037.53	26,694,037.53
Credit balances	4,621,793 56	4,777 678.11

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for March, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of March		1,310,872.28
Quantity of crude petroleum at close of Mar.	1,454,858.38	
Less sediment and surplus	150,523.51	
		1,304.334.87
Receipts during March		193,764.56
Deliveries during March—to refiners	197,270 32	
" " " to other parties	--------	197,270.32
Outstanding certificates, accepted orders, etc.		773,000.00
Credit balances		531,334.87
Total liabilities, March 31, 1886		1,304,334 87

FEBRUARY SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of February		1,330,299.35
Quantity of crude petroleum at close of Feb.	1,499,735.11	
Less sediment and surplus	138,862.83	
		1,310,872.28
Receipts during February		170,625.44
Deliveries during February—to refiners	187,652.89	
" " " to other parties	--------	187,652.89
Outstanding certificates accepted orders, etc.		804,000.00
Credit balances		506,872.28
Total liabilities February 28, 1886		1,310,872.28


Petroleum Age Map
of the
KANE OIL FIELD
Scale: 300 Rods - 1"
Rig or Drilling
Producing
Dry Hole
Gas
297
298
299
300
301
302
O Well
308
Wetmore
307
306
305
304
Clapp & Grandin.
303
3132
R.B. Stone
337
338
339
340
341
342
Hemlock Oil Co
348
347
346
345
344
343
Barnsdell
Clinton & Co
377
378
379
380
381
382
R.B. Stone
388
387
386
385
Smith
G.C. Howe
384
383
Kane Oil Co
Kane Oil Co
Kennedy
417
418
419
420
421
422.
Union Oil Co.
Coast & Co.
Wallory & Co.
428
427
426
425
424
423
Kane Oil Co.
UNION OIL CO
Tennent & Co.
3764
Roy & Archer
Associated Producers & Craig & Cappeau
3767
Craig & Cappeau
Union Oil Co.
Finnegan & Munroe
3754
Gas
Chapman & Phillips
3782
Associated Producers & Johnson
3771.
3775
Kennedy Oil
Smith & McWhirter
Roy & Archer
Thompson & Dunning
Tennent & Co
Trowbridge & Thompson Co
Craig & Cappeau
Kane Oil Co
Murphy Oil Co
2. W. Murphy
3766
Enterprise Transit Co.
3760
Roy & Archer
3788

MARCH OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN MARCH, 1886.

Allegany Field.

Twp. Owner Barrels.
Scio, 11, (Norton) Duke & Norton Oil Co No 62 5
" 51, (E J Norton) Duke & Norton Oil Co No 63 5
Alma, 2, H L McMullan No 14 6
" 20, (Crandall) W F Coast No 15 6
" 26, Miles & Wyvell 4
" 78, Rathbun & Backer No 3 4
" 86, Brown & Thornton No 2 4
Wirt, 9, (Woodard) Frank Fox No 3 5
" 33, (Pierce) Stewart Bros No 5 4
" 33, (Bliss) E S Bliss No 10 4
" 43, (Finch) G C Knox & Co No 3 .... gas
" 48, Love & Co No 2 4
" 52, (J W Jordan) Luce & Hembert No 2 3
" 52, (Burdick) Wilson Bros & Ackerly No 10 7
" 53, (Burdick) Barton, Hammond & O'Neil No 1 .... dry
" 54, (John Jordan) P M Shannon & Co No 1 .... dry
" 55, (Voorhees) S C Rhodes & Co No 1 5
" 59, Chandler & Howard No 1 8
" 60, (Alvah Jordan) Lester, Jordan & Co No 2 10
Bolivar, 7, Coast Oil Co No 37 5
" 15, (Sawyer) Smith & Sawyer No 20 8
" 23, Irwin & Morgan No 7 6
" 23, John Fay 4
Clarksville, 2, (Hatch) John Hatch No 1. 4
" 6, (Seever) Ackerly, Barton & Co No 16 10
" 6, (Wetherby) Ackerly, Barton & Co No 14 8
" 20, (Ernhout) Ackerly, Barton & Co No 9 8
" 10, Angell Oil Co No 9 10
" 10, Whipple & Davis .... dry
" 12, (S Barton) National Transit Co No 69 .... gas
" 20, (McDougal) Clarksville O I Co No 12 8
" 20, (Zimmerman) Love & Patterson No 4 5
" 28, (Butts) M Finnegan No 6. 2
1, North Div Scio, (McQueen) Middaugh & Co .... dry
Potter County, (Clark) W Duke & Co .... dry

Wells completed 35
Production 162
Dry 7

Bradford Field.

Warrant 2268, R J Straight No 17 9
Bingham lot 153, Anchor Oil Co No 9 8
O'Donnell, Wilbur Bros No 2 4
Stinson, Connelly Bros No 4 5
Tomes, Le Boeuff & Co No 1 5
B O Co, Western Oil Co No 4 8
D Walb, H O Robbins & Co No 1 .... dry
Brown, James B Fox No 3 6
Wagner, C K Book No 2 5
Colegrove, Pat Newell No 3 4
Taylor Tract, Ent Transit Co No 39 7
Clark, Hannah & Clark No 31 6
77, Quintuple, Etna Oil Co No 2 6
Lafferty, Van Vleck & Gifford No 48 10
" " " No 49 10
" " " No 55 10
Farr, Hazelwood Oil Co No 7 6
Borden, John C Looker No 29 8
Dennis, Shear & Nolan No 1 3
Irons, P V Carter No 3 5
Keating, Forest Oil Co No 52 10
Erskine, G N Grow No 2 5
Dimmick, Elder Bennett & Co 4
Prescott, Brown & Baldwin 3
Ellis, Dr Crisman 3
Morse, Morse & Brown 3
E T Co, Kervin & Co No 9 6
C B & H, Page, Walker & Co No 9 6
" M Mandeville No 7. 6
" lot 53, Fitzgibbons & Evans No 2 4
Willetts, Howe Bros No 12 10
Borden, Meachem & Fisher No 8 6
Van Campen, Barnsdall & Stearns No 10 8
" Jas K Van Campen No 1 8
Zaph, Franchot Bros No 9 10
Weston, Ernst & Perrin No 2 10
Dodge, Kemp & Patterson No 7 7
Loop, John L McKinney & Co 10
Bing'm lot 539, Union Oil Co No 45 30
" 497, " " No 2 25
" 538, C P Byron No 9 10
" 588, Associated Producers Co No 57 20
" 576, Rose & McLeod No 3 10
" 541, Jack, Brawley & Co No 1. 10
" 391, C W Scofield No 51 8
Warrant 2243, Emery Oil Co No 46 15
" 2243, " No 47 15
" 3073, Stewart, Wood & Co 5
" 4907, Royal Oil Co No 1 .... dry
Annin township, D L Tait & Co .... dry

Wells completed 51
Production 389
Dry 4

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Marsh, Collins & Phillips No 7 8
Rollins, Collins & Morse No 2 2
Swift, Van S oy, Collins & Co No 2 .... dry
Marsh, J W Patton No 3 5
Morrison heirs, Anchor Oil Co No 8 .... gas
" " No 9 10
Weed, Morse & Collins No 1 20
Harris, Fogel & Co 3

Warren, etc.

Wardwell (Island), McKelvey & Co No 4 5
Big Bend, Hill & Powell .... dry
North Warren, Lessler & Co 3
" (Kidder) C A Martin & Co .... dry
Russellsburg, (Johnson) Jamestown Oil Co .... dry

Wells completed 18
Production 56
Dry 5

Clarendon.

35, Bell & Hazeltine No 12 6
54, O W Beatty & Bro No 40 8
54, " No 41 6
497, Fred Hue No 1 6
497, H Dillberger 5
80, Johnson Irvine No 6 6
108, Hackett & Shirley No 7 6
105, " No 3 6
162, J A Dower No 6 5
463, Neill & Lammers No 2 5
463, " No 3 4
464, Columbia Oil Co No 20 6
463, J B McElwaine No 6 5
526, Keatley Bros No 14 5
526, E O Emerson No 13 3
526, " No 14 5
558, Goss, Goal & Haskell No 7 6
558, Sam Tait Jr No 9 5

Wells completed 18
Production 108

Tiona.

75, Fertig, McKinney & Co No 4 6
81, " No 1 6
81, " No 2 8
83, " No 13 8
160, Gilbert Oil Co No 32 6
161, O'Donnell & Tobias 8
161, Helm & Mealey No 6 6
164, Moore, Wark & Langworthy No 5 10
165, McKelvey & Best No 14 8
200, Bovee & Duck No 9 5
201, Mandell Oil Co No 11 5
201, W sley Chambers No 6 7
202, E O Emerson No 5 .... gas
241, L Kraeer & Co No 20 6
241, " No 21 8
241, " No 22 7
281, (Ford lease) L Kracer & Co No 6 6
281, Horton, Crary & Co No 4 8
284, Watson & Mitchell No 5 6
284, Anchor Oil Co No 1 4
284, " No 2 8
284, Hacket & Shirley No 3 5
284, Pickett & Stone No 1 6

Wells completed 23
Production 147
Dry 1

Cooper District.

679, J M Clapp & Co No 6 10
400, J A Magee .... gas
407, Cochran Bros No 10 10
408, McCalmont O I Co No 26 5

Wells completed 4
Production 25
Dry 1

Balltown.

3195, (Crissman) N F Clark No 16 40
3195, " " No 17 30
3194, Porcupine Oil Co No 36 20
4823, Balltown Oil Co No 29 15
4823, " No 30 10
5215, May, Kelley & Grandin No 45 10
5215, " No 46 50

Wells completed 7
Production 175
Dry 0

Kane.

420, Coast & Thyng No 1 250
424, Murphy & Co .... gas
425, Union Oil Co No 2 80
425, " " 3 100
425, " " 4 150
425, " " 5 180
425, " " 7 100
426, Kane Oil Co " 2 100
426, " " 3 100
426, " " 4 150
426, " " 5 180
3767, Craig & Cappeau No 8 60
3767, " No 9 80
3767, " No 10 100
3775, lot 12, John T Griffith No 2 30
3775, " 13, P T & W C Kennedy No 2 20
3775, " 14, U A Andrews No 3 est 20

Wells completed 17
Production 1650
Dry 1

Miscellaneous.

Fogel, Dr Shamburg 6
Forest, 3644, F J Clemeuger & Co .... dry
Dawson Run, Tionesta, Roess Bros .... dry

Grand Valley.

Carpenter, L B Wood & Co No 5 15
" " No 6 20
Hunte , " No 1 20
Emerson, G P Kepler & Co No 6 5
R O Co, (Star) Reno Oil Co .... dry
West Branch, (lot 142) Jameson & Co No 2 dry
Lot 186, W W Benedict & Co No 2 20
Carpenter, W J Jackson & Co No 1 6
C H Ames, Daniels & Co No 1 5
Farrell, Nelson Farrell, No 1 2
Campbell, Holman & Hopkins No 1 est .. 10
Lot 186, Sam Stewart No 1 25
Peterson, Miller & Crippens 6

Wells completed 16
Production 140
Dry 4

Lower Country.

Venango and Other Sections.

Farm. Operator. Barrels.
McCalmont, S P McCalmont 3
Hancock, Oil City Fuel Supply Co .... gas
Pin Oak, J B Smithman 3
Mead, " 5
Brundage, B F Brundred 3
Columbia, Columbia Oil Co No 164 .... dry
Brown, Anchor Oil Co .... dry
Frampton, Frampton & Turner 2
Phillips, Fisher Oil Co No 1 3
Smokey, (Melatt) Dr Galbraith No 1 10
" (Miller) David Newell 2
Gas City, (Gilfillan) Baum & Co .... dry

Tarkill.

Webb, Taylor, Torrey & Murphy No 4 .. dry
Wm Hill, " No 6 .. 100
" " No 7 .. 100
W H Hill, " No 9 .. 60
Cartright, Koch & Goettel .... dry
Weaver, Heeter & Heeter .... dry
Benton, Benton Oil Co No 1 300
Baum, W C Baum & Co No 2 .... dry
Henne, S S Henne .... dry

Rockland.

John Hetzler, Dale Bros No 7 10
J Jolly, " No 7 15
" " No 8 75
D Porter, Goodrich & Salisbury No 5 15
R Porter, Flynn Bros No 7 8
Hetzler, H F Boyd & Co No 4 est 25
Campbell, C C Bowen & Co 30
" Ritts, Vensel & Co 8
Cox, Forest Oil Co No 3 4
J Jolly, Morgan & Fox No 4 30
J Jolly, Leckey & Foster No 5 25
" " No 6 20
Johnson, Leckey & Foster No 2 est 10
" Heydrick & Putnam No 1 30
Shavers, Hulings Bros No 2 20
D Porter, Koch & Rider No 3 20
Black, Wilson & Smith No 2 .... dry
Hetzler, Gibson & Co 15
Karns, (Stevens heirs) Reed & Co .... dry

Bullion.

Baker, Hovis & Co 5

Vicinity Emlenton.

Sheasley, Jacob Sheasley No 1 8
" " No 2 6
Hayes, Bennett & Allen No 4 6
Dr Crawford, Wm Weaver No 4 20

Six Points, (Grant) J P Crawford & Co. dry
Leslie, Leslie & Anderson 10
L Sloan, Sloan & Lawrence 10

Wells completed 48
Production 1016
Dry 12

Clarion.

Cogley Run.

Rikenbrode, Col John J Carter No 8 50
Berlin, Patterson, Leedom & Hayes No 13 10
John Deitrich, Lovell & Co No 9 2
W L Hess, Emlenton Oil Co No 6 5
" W L Hess No 3 15
" " No 5 15
Beals, Beals, Hunter & Co No 4 est 10
" Burchet, Mong & Co 20
Edmunds Heirs, Urquhart & Lavens No 5 10
John Henel, Koch Oil Co No 1 40
Hess, L Oil Co No 4 15
Baum, Berlin & Co No 8 dry
John Herrmann, Wolf & Bell No 6 3
Findley, Maxwell & Co dry
John Deitrich, Pipe Line Boys 25
Berlin, Berlin & Son No 2 25
Herrman, Young & Roess No 3 20
Shreffler, Hall & Co No 2 35
Wm Mong, Chambers & Co No 2 15
Johnson, Swartzfeger & Co dry
Wagner, Hite & Dobson 3
Lehigh, Elizabeth Pye 30
Fox Estate, Fox & Fink No 28 3
Thos Baker, Deer Creek Oil Co 3
Smith, Smith & Hahn No 6 15
" Smith & Wagner, No 1 12
Wagner, Wagner & Hahn No 5 5
Black, Furness, Laney & Co dry
Lucinda Furnace, McGrew Bros dry
Panton, Panton dry

Wells completed 30
Production 409
Dry 6

Butler and Armstrong.

S Pontius, Hunter & Cummings No 7 40
" " No 8 10
McKeever, Showalter Bros & Hartman No 3 60
" " No 4 60
" " No 5 5
" " No 6 50
Thos Glenn, Fetzer, Dale & Co 60
Geo Burford, Dale, Wolford & Co No 2 50
Frederick, J Frederick Oil Co No 1 40
Miller, Dennison & Co No 3 100
M Maley, Leidecker & Co dry
Graham, Sheffield & Co dry
John Rogers, Reep & Sutton 10
McCandless, J D McJunken No 1 dry
" Root, Johnson & Co dry
Nolshire, J B McJunken & Co dry
Hartman, Leidecker & Turner 15
L Daubenspeck, James Elliott dry
A L Campbell, Campbell & Co 2
Crawford, J C Widger 2

Wells completed 20
Production 504
Dry 6

Washington.

Hess, P L & H Co No 2 20
Weaver, Citizens' Oil & Gas Co No 1 est. 8
Weirich, Union Oil Co dry
McGovern, " est 15
Lead Works, Mulholland & Co 30
" Caldwell & Marsh 25
Davis, Conroy & Johnson dry
J Manifold, Pew & Emerson (Mountain sand) 140
Cradle Factory lot, W S Guffey 140

Wells completed 9
Production 378
Dry 2

Shoustown, Etc.

Mt Nebo, Frederick & Co dry
Dixmont Asylum, Dixmont Asylum gas
Economite, Economites 4
Wm Hood, Raccoon Oil Co 40
Brady's Run, Phillipsburg Oil Co 3

Wells completed 5
Production 47
Dry 2

DRILLING WELLS.

RIGS UP AND BUILDING MARCH 31, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
1,	Applebee Bros No 12	drilling
3,	Coyle & Simon No 2 (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Union Oil Co No 9 (old)	rig
51,	(E J Norton) Duke & Norton Oil Co No 64	sand

New rigs 0
Old rigs 4
Drilling 2

Total 6

Alma.

3,	Triangle Oil Co No 19	drilling
3,	Weeter & Baldwin No 5 (old)	rig
21,	(Noble), McConnell & Co No 7	rig bldg
23,	Vance & Horton	sand
23,	" (old)	2 rigs
24,	W F Jones (old)	rig
26,	Willetts & Elliott (old)	rig
28,	F N Whitcomb No 2 (old)	rig
37,	Perrin & Young No 11	drilling
37,	(Randall) L & E F Willetts No 2	drilling
37,	A A Almy No 2	rig
38,	Pikeville Oil Co No 9	rig
51,	Sawyer & Co (old)	rig
78,	Rathbun & Backer No 4	drilling
86,	Brown & Thornton No 3	drilling
86,	Shirley & Hochstetter No 10	drilling
107,	" No 9 (old)	rig
88,	Duke & Co (old)	rig
115,	Beck & Crandall No 1	rig bldg
120,	McCalmont Oil Co No 10 (old)	rig
140,	Willetts, Duke & Rauber No 10	drilling
142,	Dean & Smith No 5 (old)	rig

New rigs 4
Old rigs 11
Drilling 8

Total 23

Wirt.

1,	(Riley Allen) Emp Gas & Fuel Co No 2 (old)	rig
34,	(Drum) J B & E C Bradley No 3 (old)	rig
47,	(Johnson) Jamestown Oil Co No 1	drilling
47,	" Nile Oil Co No 1	drilling
48,	(Hicks) Chas Phillips No 4	drilling
48,	" " No 5	rig
48,	" " No 6	rig
48,	" Love & Co No 3	drilling
48,	Wirt Petroleum Co No 5	rig
48,	(Church) Allegany Oil Co No 2	drilling
48,	" Nile Oil Co No 1	rig
52,	(Jacob Jordan) Barton, Ackerly & Smith No 7	drilling
52,	(Burdick) Wilson Bros & Ackerly No 11	rig
54,	(R Mulkins) P M Shannon & Co No 2	rig bldg
55,	(Orson Witter) " No 1	rig
55,	(Voorhees) S C Rhodes & Co No 2	500
59,	(Labar) Reynolds & Co No 2	300
59,	Chandler & Howard No 2	rig
59,	(Carnahan) Dow & Barnsdall No 1	400
59,	" " No 2	rig
60,	(Alvah Jordan) J H Snow No 5	rig
60,	" Lester, Jordan & Co No 3	rig bldg
61,	(Isaiah Jordan) " No 7	drilling
61,	(Goodell) C Phillips No 1	300
61,	(Deyoe) Pangborn & Co	rig
62,	(Peterson) Barton, Hammond & O'Neill No 1	drilling

New rigs 12
Old rigs 2
Drilling 12

Total 26

Bolivar.

12,	Wood & Co (old)	rig
23,	F C Streeter & Co No 12 (old)	rig
23,	John Fay	drilling
23,	Irwin & Morgan No 8	rig bldg
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig
31,	Smith & Co No 10 (old)	rig
36,	Kilbury & Co No 1	1200

New rigs 1
Old rigs 5
Drilling 2

Total 8

Genesee.

7,	Elsessor & Barmore No 5	drilling
11,	(Little Genesee) Emp Gas & Fuel Co Limited (for gas) (old)	rig
14,	Merwin (old)	rig
22,	I Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
22,	" No 19 (old)	rig
23,	Hughes & Coughlin (old)	rig
24,	Emery Oil Co No 9	sand
24,	" No 10	rig
25,	Nighthawk Oil Co	drilling
29,	William Cranston (old)	rig
38,	S E Young (old)	rig

New rigs 1
Old rigs 11
Drilling 3

Total 15

Clarksville.

3,	(Millis) Chas Phillips No 2	300
3,	(Millis) Fritz & McKelvy No 1	drilling
3,	(Alvah Jordan) A B Cottrell No 1 fishing	sand
3,	" " No 3	rig
3,	(M Jordan) M Jordan No 1	rig
5,	(Hubbard) Ackerly & Sammel No 1	drilling
5,	(Wetherby) Harris, Johnson & Co No 2	rig
5,	" " No 3	rig bldg
5,	" Congdon & Warner No 2	drilling
5,	" " No 3	rig bldg
5,	(Bradford) Barton, Ackerly & Co No 1	rig
5,	(Jordan) Penny & Co No 1	rig
6,	(Seever) Ackerly, Barton & Co No 9 (old)	rig
6,	(Swartwout) " No 10	drilling
11,	(Congdon) " No 17	rig
9,	Heuston & Brecht No 4 (old)	rig
9,	Merritt (old)	rig
10,	(Swartwout) Angell Oil Co No 10	drilling
10,	" " No 15	drilling
10,	" " No 14	rig
10,	" " No 17	rig
11,	(Keller) "	rig bldg
13,	(Wixon) Barton, Ackerly & Co No 3	rig
14,	(Lane) " No 29	rig
20	(Ernhout) " No 6 (old)	rig
20,	" " No 23 (old)	rig
14,	(Lane) Lane Oil Co No 2	350
14,	" " No 3	rig bldg
20,	(McDougal) Mack Oil Co No 6	drilling
20,	" Love, Patterson & Co No 1	drilling

New rigs 14
Old rigs 5
Drilling 11

Total 30

Miscellaneous.

Amity Twp, (McGibony) Baker & Co rig bldg
Near Nile Village, Hard to Raise Oil Co drilling

New rigs 1
Old rigs 0
Drilling 1

Total 2

Bradford Field.

East and West Branches.

Dent, Whitney & Wheeler No 40 (old)	rig
Cary, W H Duncan No 4 (old)	rig
O'Donnell, Wilbur Bros No 3	drilling
Watrous, A K Darrow No 1	drilling
" Waugh & Porter No 2	rig
Warrant 2268, R J Straight No 18 (old)	rig
" 2258, Van Vleck & Mitchell No 35	1500
Bingham, lot 154, Union Oil Co No 20	1600
Craft, Roy & Archer No 18	sand
B O Co, Western Oil Co No 7	rig
Mack, Columbia Oil Co (old)	rig
" Fisher Oil Co No 19 (old)	rig
Hatfield, Wesley Chambers (old)	rig
Brown, James B Fox No 4	rig bldg
Wagner, C K Book No 3	rig
Blair, Tom McDonough No 2	drilling
Whitney & W, S G Elliott No 3	rig
Whitney Imp lot 2, P C L & P Co (old)	rig
Cockroft, Jas E Cochran No 2	drilling
" Bovaird & Seyfang	drilling
Hinchey, McMurray Bros No 6 (old)	rig
Foster, C H Foster No 2	rig
Hooker, P Hooker No 1	rig
Paton, McClure & Co (old)	rig
Clark, McCray Bros (old)	rig
Willis, " (producing)	550

Quintuple.

25,	C W Scofield (old)	rig
44,	J W Humphrey (old)	rig
107,	J S Wilson No 3	drilling
11,	Camp & Zane No 13	400
140,	Booth Bros No 2	700

220, Clark, Stearns & Co (old) ..... rig
260, E T Howes (old) ..... rig

New rigs 7
Old rigs and shut down 15
Drilling 11
Total 33

Kendall Creek.

Turner, Perry Tumblin No 7 ..... drilling
Fisher, Larrabee & Whedon No9(old) ..... rig
Lafferty, Van Vleck & Gifford No 50 rig bldg
" " No 53 rig bldg
" " No 54 400
Spencer, Seward Bros No 4 1500

New rigs 2
Old rigs 1
Drilling 3
Total 6

Knapp's Creek.

Patterson, I Willetts No 29 ..... drilling
Matthews, C B Whitehead No 6 (old) ..... rig
Borden, T P Thompson ..... rig
" " ..... 2 rigs bldg
" John Looker No 22 1000
Duke, J West No 7 (old) ..... rig
" " No 8 (old) ..... rig
Middaugh, A C Hawkins No 9 ..... rig
Norton, F W Mitchell No 19 ..... rig
Berger Hollow, Shattuck & son No 4 drilling
Boot Leg, C I Robinson No 10 ..... drilling
Sprague, E E Sprague ..... drilling
Keating, Forest Oil Co No 53 100
" " No 54 ..... rig bldg
Vaughn, Martin & Co No 2 ..... drilling
Ellis, Dr Crisman ..... rig bldg
Rixford, Alfred & Co ..... rig bldg
" Elder Bennett ..... rig bldg
Lamphear, D J Keyes ..... s nd

New rigs 9
Old rigs 3
Drilling 8
Total 20

Foster Brook.

E T Co, Kervin & Co No 9 ..... rig
" " No 10 ..... rig bldg
" Coleman, Penny & Boyne No 12 (old) ..... rig
C B & H, Page, Walker & Co No 10. drilling
" Juter & Yager (old) ..... rig
" Bulger & Dana No 5 800
" Johnson & Co No 9 ..... drilling
" Roberts & Co No 13 ..... rig
" Clark, Cooper & Co No 9 (old) ..... rig
" Burns & Monroe No 7 ..... rig
" Mosier Bros No 9 ..... rig
" lot 61, Fitzgibbons & Evans No 3 ..... drilling
——, J Stettheimer No 3 ..... drilling
——, " No 6 ..... rig
Wilcox, Allen (old) ..... rig
Foster, Tucker, Rolfe & Burns No 13 ..... sand

New rigs 6
Old rigs 4
Drilling 6
Total 16

Four Mile.

Van Campen, Wm M Brown (old) ..... rig
" Jas K Van Campen No 2 300
" " No 3 ..... rig bldg
Waters, Griffin & Howard No 2 (old) ..... rig
Burlingame, Union Oil Co No 8 ..... sand
Fries, Franchot Bros No 11 600
Zaph, " No 10 ..... rig bldg
Dye, Manhattan Oil Co No 5 (old) ..... rig
Stevens, Wm Stevens ..... drilling
" Book & Rhodes No 10 1000
" " No 11 ..... rig

New rigs 3
Old rigs 3
Drilling 5
Total 11

Indian Creek.

North Branch, J D Downing & Co (old) ..... 2 rigs
Hamlin, Miller & Odell No 4 (old) ..... rig
" Forest Oil Co No 39 ..... sand
" " No 40 ..... rig
" " No 41 ..... rig bldg
Weston, J L McKinney & Co No 6 ..... sand
" Ernst & Perrin No 3 ..... drilling
" " No 4 ..... rig
" Murphy, Hogan & Williams No 8 ..... drilling
Wright & Sawyer, L H Ballard No 4 300
G & A, Gallagher Bros No 13 1000
Barse, Union Oil Co No 39 600
" J Stettheimer No 1 ..... rig
Keyes, D J Keyes No 6 ..... rig

New rigs 5
Old rigs 3
Drilling 7
Total 15

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) ..... rig
" 2263, " No 7 (old) ..... rig
Bingham, lot 539, Union Oil Co No 46 1000
" lot 496, " No 3 1200
" lot 69, Bennett & Thompson No 11 (old) ..... rig
" lot 585, Asso'd Prod Co No 58 ..... rig
" lot 577, Rose & McLeod No 6 500
" lot 477, Tucker & Rolfe No 3 (old) ..... rig
" lot 5 8, C P Byron No 10 ..... rig
" lot 539, " No 11 ..... drilling
" lot 497, Jack, Brawley & Co No 2 450

New rigs 2
Old rigs 4
Drilling 5
Total 11

Kinzua.

Warrant 3076, Union Oil Co No 63 1650
" 3076, " No 64 ..... rig
" 2243, Emery Oil Co No 48 ..... drilling
" 2243, " No 49 ..... rig bldg

New rigs 2
Old rigs 0
Drilling 2
Total 4

Miscellaneous.

Warrant 4907, Royal Oil Co ..... rig bldg
Lillibridge, Mike Casey & Co ..... rig
Freeland, Conroy & Johnson No 2 700
Frank Waters, Stow & Co No 1 ..... drilling
Kahm, Conroy & Co No 1 300
J Riehler, Smart Aleck Oil Co No 1. rig bldg
Sub 9 of Range 9, Stevens Bros ..... rig bldg

New rigs 4
Old rigs 0
Drilling 3
Total 7

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Marsh, Collins & Morse No 7 ..... sand
Richardson, T G Phillips ..... drilling
English, Graveyard Oil Co (old) ..... rig
S S Harris, Dr VanSooy (old) ..... rig
Morrison Heirs, Anchor Oil Co No 10 ..... sand
Island, Wm Fo el ..... sand
Weed, Morse & Collins No 2 ..... rig bldg
" Duke & Harris No 1 ..... rig bldg

Warren, Etc.

Wardwell, Benedict & Rockwell, No 33 ..... drilling
" " No 34 ..... rig
Willie, Beatty & Pickett (old) ..... rig
North Warren, Rhumor & Co ..... drilling
" Leger ..... rig bldg
" (Scott) Trubey & Co ..... sand
Hoffman, Nesmyt No 3 ..... rig
Quaker Hill, John Cramer ..... rig

New rigs 6
Old rigs 3
Drilling 7
Total 16

Clarendon.

35, Bell & Hazeltine ..... rig
35, Murphy & Henderson No 5 ..... rig
35, " No 6 ..... rig bldg
Stoneham, Newell 800
54, O W Beatty & Bro No 42 ..... rig
496, " No 17 200
496, " No 18 ..... rig
496, Fred Hue No 14 ..... sand
497, " No 2 ..... rig bldg
497, C C Duffie'd & Co N 10 500
79, Rogers Bros ..... drilling
80, J S Tucker No 10 ..... sand
80, Johnson Irvine No 7 ..... rig
80, " No 8 ..... rig
105, Sam Tait Jr No 4 ..... drilling
107, W B Roberts & Son No 6 200
107, " No 17 ..... rig
108, Hackett & Shirley No 9 200
108, " No 10 ..... rig bldg
105, " ..... rig
105, R I Shugert ..... rig bldg
162, J A Dower No 7 ..... rig
495 M Matson No 6 (old) ..... rig
463, D Riddlesperger 600
466, Maginnis ..... rig
464, Branch & George No 3 300
463, J B McElwaine No 7 ..... rig
460, Waid & Co ..... sand
495, Ulman, Steck & Co No 2 ..... rig
526, Keatley Bros No 15 600
526, E O Emerson No 15 200
526, " No 16 ..... rig
527, F H Rockwell & Co No 22 ..... sand
527, " No 23 ..... rig
558, Goss, Goal & Haskell No 8 ..... rig
488, Capt E H Barnum ..... sand

New rigs 19
Old rigs 1
Drilling 16
Total 36

Tiona.

81, Doc Jenkins No 4 600
83, Booth Bros No 5 ..... sand
74, Fertig, McKinney & Co No 3 ..... sand
75, " No 5 ..... rig
81, " No 3 ..... rig
81, " No 4 ..... rig
81, " No 5 ..... rig
8 , " No 6 ..... rig
81, " No 7 ..... drilling
81, " No 8 ..... drilling
83, " No 4 ..... rig bldg
83, " No 6 ..... rig
83, " No 7 ..... rig
83, " ..... drilling
109, O F Schonblom No 11 500
108, Pat Connors 700
111, Wheedon & Shearer No 2 200
160, Gilbert Oil Co No 33 200
160, " No 34 ..... rig
160, D Gardner No 8 700
160, O'Donnell & Tobias No 7 100
161, " No 12 ..... rig bldg
161, Helm & Mealey No 7 ..... rig
164, Moore, Work & Co No 6 300
165, McKelvy & Best No 15 1000
200, Bovee & Duck No 10 ..... rig
201, Mandell Oil Co No 12 ..... drilling
202, " No 13 ..... rig
201, " No 14 ..... rig
202, " No 9 (old) ..... rig
201, Wesley Chambers No 7 ..... drilling
201, " No 8 ..... drilling
201, " No 9 ..... rig
201, " No 10 ..... rig bldg
205, Smith, Bright & Co No 4 200
205, " No 5 ..... rig bldg
205, Emerson & Farnsworth No 12 ..... rig
204, " No 13 ..... rig bldg
240, Pickett & Farnsworth No 5 ..... rig bldg
240, F W Winger No 5 (old) ..... rig
241, L Kraeer & Co No 23 (fishing) ..... sand
241, " No 24 ..... rig
244, Horton, Crary & Co No 2 (old) ..... rig
244, " No 9 ..... drilling
244, " No 10 ..... rig
244, " No 11 ..... rig
244, " No 12 ..... rig
281, " No 5 100
281, " No 6 ..... rig
28 , Watson & Mitchell No 6 200
284, " No 7 ..... rig bldg
284, Hackett & Shirley No 4 ..... rig
284, " No 5 ..... rig
284, Anchor Oil Co No 3 ..... rig
284, " No 4 ..... drilling
284, Pickett & Stone No 2 ..... drilling
284, " No 3 ..... rig

New rigs 30
Old rigs 3
Drilling 24
Total 57

Cooper District.

369, Clapp, Lockhart & Elder No 7 ..... drilling
407, Shank & Stewart No 9 (old) ..... rig
407 " No 13 (old) ..... rig
407, Cochran Bros No 11 ..... sand
407, " No 12 ..... rig

New rigs 1
Old rigs 2
Drilling 2
Total 5

Balltown.

737, Miller & O'Dell (fishing) ..... sand
3195, (Crisman) N F Clark No 14 ..... rig
3195, " " No 18 ..... drilling
3195, " " No 19 ..... drilling
3194, Porcupine Oil Co No 37 ..... drilling
3194, " No 38 ..... rig
4823, Balltown Oil Co No 31 ..... drilling

4917, Clark & Berry ..... drilling
5214, James Welsh ..... sand
5215, May, Kelley & Grandin No 47 ... 500
5215, " No 48 ... rig

New rigs 3
Old rigs 0
Drilling 8
Total 11

Kane.

345, Clinton & Swaine 500
346, The Barnsdall ..... rig
379, Tom Kervin ..... rig bldg
384, F W Andrews & Co ..... drilling
385, Kane Oil Co 450
419, Union Oil Co ..... sand
420, Coast & Sons No 2 350
420, " No 3 ..... rig
420, " No 4 ..... rig bldg
420, " No 5 ..... rig
420, " No 6 350
420, " No 7 450
420, " No 9 100
421, Mallory & Co No 1 1000
421, " No 2 1000
421, " No 3 300
421, " No 4 ..... rig
421, " No 5 ..... rig bldg
421, P T & W C Kennedy 300
423, Kane & Co (old) ..... rig
424, Murphy & Co No 2 1000
424, Lincoln & Co No 1 1000
424, " No 2 ..... rig
424, Fertig & Co 1000
424, Shirley & Hochstetter No 2 1800
424, " No 3 1000
424, " No 4 400
424, " No 5 ..... rig bldg
424, Lincoln & Co No 1 1000
424, " No 2 ..... rig
424, Murphy & Co No 2 1000
424, M K McMullin (old) ..... rig
424, Tennent & Co No 2 (shut down) 200
425, Union Oil Co No 1 ..... sand
425, " No 6 ..... sand
425, " No 8 1400
425, " No 9 1600
425, " No 10 1700
425, " No 11 1900
425, " No 12 1750
425, " No 13 1300
425, " No 14 1400
425, " No 15 1500
425, " No 16 400
425, " No 17 800
425, " No 18 450
425, " No 19 350
425, " No 20 150
425, " No 21 150
425, " No 22 ..... rig bldg
425, " No 23 ..... rig bldg
426, Kane Oil Co No 6 (fishing) 1900
426, " No 7 100
426, " No 8 ..... drilling
426, " No 9 (fishing) 1300
426, " No 10 ..... rig
426, " No 11 300
426, " No 12 ..... drilling
3132, Frank Andrews No 1 ..... drilling
3132, " No 2 ..... drilling
3153, Merchants' Oil Co ..... drilling
3754, Union Oil Co (old) ..... rig
3767, Craig & Cappeau No 5 ..... rig
3767, " No 6 600
3767, " No 7 1500
3767, " No 11 2100
3767, " No 13 1500
3767, " No 14 ..... rig
3767, " No 15 100
3767, " No 16 1200
3767, " No 17 ..... rig
3767, " No 18 ..... rig bldg
3767, Finnegan & Monroe No 1 ..... drilling
3767, " No 2 ..... drilling
3767, " No 3 ..... drilling
3767, " No 4 ..... rig
3767, Roy & Archer No. 1 300
3767, " No 2 ..... rig bldg
3771, F J Clemenger & Co 1000
3775 lot 11, Kane Oil Co No 3 1000
3775 lot 12, John T Griffith No 3 600
3775 lot 12, " No 4 ..... rig
3775 lot 13, P T & W C Kennedy No 3 ..... sand
3775 lot 13, " No 4 1600
3775 lot 13, " No 5 ..... rig bldg
3775 lot 13, " No 6 400
3775 lot 13, " No 8 ..... rig bldg
3775 lot 14, Andrews No 3 ..... drilling
3775 lot 14, " No 4 ..... rig
3775 lot 5, Thompson & Denman (old) ..... rig
3775 lot 20, Bayne & Fuller No 2 ..... drilling
3775 lot 21, Brenneman & Co ..... drilling

New rigs 24
Old rigs 5
Drilling 65
Total 94

Miscellaneous.

McKean 232, Pennsylvania Gas Co 100
Jefferson county, Keatley Bros 1800
Elk county, Unknown ..... rig
Forest, 3190, Curll, Campbell & Co 800

Grand Valley.

Carpenter, L B Wood & Co No 7 ..... rig
Neal, " No 1 500
Hunter, " No 2 ..... rig bldg
Lot 105 (Fanny Watson) Emery, Ralston & Co ..... sand
" 186 (E B Pet Co) W W Benedict & Co No 3 100
" " " No 1 ..... sand
Dunderdale, Dunderdale Oil Co No 17 ..... rig
Blakeslee, Miller & Co No 2 ..... rig
Merritt, " ..... rig bldg
J Hunter, H P Boyd & Co 200
Robinson, Tucker & Lowen ..... sand
Hunter, Jos Millison 200
Proper, W W Hague No 3 (old) ..... rig
Emerson, " No 3 (old) ..... rig
Carpenter, W J Jackson & Co No 2 ..... rig
Emerson, Benson & Co ..... sand
C H Ames, Daniels & Co No 2 ..... rig bldg
Farrell, Nelson Farrell No 2 ..... drilling
Wheelock, Jesse Wheelock No 3 ..... rig bldg
Lot 186, Sam Stewart No 2 200
Reno Oil Co, Reno Oil Co No 2 ..... rig bldg
——, Jamieson & Co No 3 ..... rig bldg
Gilder, Boyle & Co ..... drilling
Campbell, Holman & Hopkins No 2 ..... drilling
Mason, " No 1 ..... rig
Philadelphia tract, " No 1 ..... rig
Peterson, Groves ..... rig bldg

New rigs 14
Old rigs 2
Drilling 15
Total 31

Lower Country.

Venango and Other Sections.

Allison, Fisher Oil Co No 11 (old) ..... rig
Benninghoff, Oil City Fuel S'ply Co No 1 ..... drilling
" " No 2 ..... drilling
W Ecke, " No 1 ..... drilling
Brundage (Holiday Run) Brundred ..... rig
Blood, McCandless ..... rig
Chas Lake, Loots & Co No 2 ..... rig
Columbia, Columbia Oil Co No 165 ..... rig
Kirkwood, J Kirkwood ..... rig
Griffin, Purtell (old) ..... rig
Henderson, Kulp & Stewart ..... rig
Widow Brown, Stewart & Co ..... drilling
Pleasantville, Emery & Skinner No 2 ..... sand
Young, Octave Oil Co No 20 ..... rig bldg
Jemie, (Black Ash) Emery & Schuyler No 1 ..... sand
" " " No 2 ..... rig bldg
Pithole, Cubbins ..... rig bldg
Smokey, (Melott) Dr Galbraith No 2 ..... rig bldg
Osmer, Galbraith & Parker (old) ..... rig
Cornplanter, (Winger) Sheasley & Galbraith 500
Snider, D McElphatrick ..... rig
" " ..... rig bldg
Epley & Reem, Epley & Reem ..... drilling
McBride, McBride & Roe ..... rig

Tarkill.

Fox, Taylor, Torrey & Murphy No 8 (shut down) ..... sand
J P Hill, " No 10 ..... rig bldg
Webb, " No 11 400
" " No 12 ..... rig bldg
Baum, W C Baum & Co No 3 ..... rig
Benton, Benton Oil Co No 2 100
" " No 3 ..... rig
Lawley, McKeever & McPherson 1200
" Cornwall & Hassan No 1 ..... sand
" " No 2 600
" " No 3 ..... rig
Shafer, Kane & Boyd ..... rig
Dolan, S P McCalmont (old) ..... rig
Stover, Holt & Dorrington 200
Linn, Chas Linn & Co ..... rig

Rockland or Red Valley.

John Hetzler, Dale Bros No 8 (old) ..... rig
" " No 9 ..... drilling
Black Heirs " No 2 (old) ..... rig
H M Dale, Dale Bros No 1 (for gas) ..... drilling
R Porter, Goodrich & Salisbury No 5 ..... sand
D Porter, " No 6 ..... sand
" " No 7 ..... rig
R Porter, Flynn, Bros & Co No 8 ..... drilling
Hetzler, H P Boyd & Co No 5 100
Batten, Bowen & Bartlett No 2 ..... rig
Shafer, Heydrick, Hite & Co ..... rig
Wicks, W H H Piper No 8 500
" " No 9 ..... rig bldg
Phil & Bost tract, W H H Piper No 1 500
Cox, Forest Oil Co No 4 400
J Hetzler, Morgan & Fox No 4 200
J Jolly, Leckey & Foster No 7 ..... rig
" " No 8 ..... rig
Bell, Fisher Oil Co 100
Johnson, Heydrick & Putnam No 2 ..... rig bldg
Showers, Hulings Bros No 3 100
Hetzler, Rider & Co ..... drilling
Gehrhart, Gibson & Co 500
G & S, Grant & Sheasley No 1 200
" " No 2 ..... rig bldg
Shippen heirs, Dale & Shafer ..... sand
Gates, H J Morton & Fuller ..... rig bldg
Glenn, Wilson & Smith ..... rig
Cox, Heydrick & Co ..... drilling

Bullion.

Taylor, J McElree ..... rig

Vicinity Emlenton.

Eli Osmer, N Mackin 500
D Russell, Baum & Co (old) ..... rig
Porterfield, A A Hopkins (old) ..... rig
Elder, Wilson Bros ..... rig
W P Grant, Adams & Co 500
Robert Graham, Bennett & Allen ..... rig bldg
Dr Crawford, Wm Weaver No 5 200
" " No 6 ..... rig bldg
W T Crawford, H Crawford & Co 500
Dr Crawford, N Mackin ..... rig bldg
Jew tract, Thomas & Jamieson No 6 200
J W Smith, Sheasley & Comstock No 6 ..... sand
" " No 7 ..... rig bldg
Jones, Stevens & Co ..... rig

New rigs 34
Old rigs 12
Drilling 39
Total 85

Clarion.

Rickenbrode, Col John J Carter No 7 300
Berlin, Patterson, Leedom & Hayes " " No 14 ..... rig
Fisher, Staley, McDonell & Deitrich (old) ..... rig
W L Hess, W L Hess No 4 500
" Morrison No 6 500
" " No 7 ..... rig bldg
Beals, Brown, Whitehill & Co (old) ..... rig
Edmunds Heirs, Urquhart & Lavens No 6 300
E Slicker, Painter & Co (old) ..... rig
John Henel, Koch Oil Co No 5 500
" " No 6 ..... rig
Amos Strutman, Booth, Gifford & White 500
H J Smith, Shaffer & Sheasley No 3 (old) ..... rig
Kinnemuth, Pagett & Co No 3 500
Widow Deitrich, Wolf & Bell No 4 ..... rig
" " No 5 ..... rig
John Herrmann, " No 7 1000
" " No 8 ..... rig
Kribbs, H H Stow ..... rig bldg
Catherman, Shreffler ..... rig
Long, R J Nicholson (old) ..... rig
Berlin, Berlin & Son ..... rig bldg
Shreffler, S Y Ramage No 4 150
Shreffler, Hall & Co No 3 ..... rig bldg
Deitrich, Kale Bros No 3 500
Lewis Delo, Kribbs, Mays Bros & Co ..... drilling
Stumpner, John Deitrich 500
Widow Deitrich, Pagett No 2 ..... rig
Lloyd, Ritts ..... rig
Mimm, Bovaird & Seyfang ..... rig
Black, Jacob Black & Sons 70
W N Wilson, Kale & Co ..... rig bldg
Brenneman, Swartzfezer ..... rig bldg
Baker, D O White 850
Wagner & Curl, Hite & Dobson No 1 200
Henry Kiser, Yonkers & Black 700
Wagner & Curl, B B Campbell ..... sand
" Wagner & House No 6 100
Hartman, Hahn & Co ..... rig
Banner, Banner Bros 150
Leeper Tract, Leeper & Co No 2 400
Sheet-, Jenerett 100
Wagner & Curl, Ritts ..... rig bldg
Starr, Starr & Co 350
Moore, Snyder, Loots & Co ..... rig
McCammont, Blyson Run Oil Co 500
McCummings, Oak Shade Oil Co No 2 ..... rig
Perry township, Petrolia parties ..... drilling
" O P Miller farm Dale Bros ..... drilling
" Logue Bros ..... rig

New rigs 20
Old rigs 5
Wells drilling 25
Total 50

Butler and Armstrong.

Kesselman, Bott & Story (o'd) ..... rig
J Pontius, Lynch & Co (old) ..... rig
McCrea, Smith & Boyd (old) ..... rig
Titley, Titley & Bros No 4 1350
" " No 5 400
" " No 6 ..... rig bldg
Black, Ross, Reynolds & Co (old) ..... rig
Barnhart, Westerman & Pontius No 2 1350
" " No 3 900
" " No 4 ..... rig
" Reep & Sutton 1200
R W Barnhart, McTamany & Co (fishing) ..... top sand

McKeever, Showalter Bros & Hartman No 7 700
" " No 8 600
" " No 9 400
" " No 10 450
" " No 11 500
Thos Glenn, Fetzer, Dale & Larkin No 2 400
" " No 3 700
" " No 4 500
Dulity, Ireland & Hughes 500
" " .... rig
" Greenlee & Co No 2 .... drilling
" " No 3 .... rig
Geo Burford, Dale, Walford & Co No 3 800
Frederick, Jacob Frederick Oil Co No 2 .... rig
Miller, Dennison & Co No 4 800
" " No 5 .... rig bldg
" " No 6 .... rig bldg
" Kifer 1250
Bromfield, Boyd & Co No 4 300
Glen, Gospel Oil Co 300
Black, Campbell & McBride .... rig
" Forquer Bros & Co No 1 600
John Rogers, Branch Creek Oil Co. rig bldg
Duffey, McBride & Campbell 1250
Dolan, Dolan & Brady .... rig bldg
Jefferson twp, Gibson & Gahagan .. drilling
Sarversville, Fisher Oil Co 400
Slate Lick, Brown & Grace .... rig bldg
Jefferson twp, Conkle & Co .... rig
Frank Miller, Hemer & Co .... rig bldg
Craigville, S D Bell .... drilling
Rape, Fishell & Connors 1300
Goehring, Boyd & Semple 1175
Snyder, Myers & Simcox .... sand
Smith, Colbert 1000
Gallagher, Phillips Bros (fishing) .. 1255
Patterson, " No 2 .... sand
C Mechlin, " 1450
Squire Reatt, Hunter (old) .... rig
" Fisher Oil Co .... sand
Worthington, Hooks Bros 700
Renfrew Station, O'Hara, Thomas & Rigney 1300
Kansler, Hunter & Cummings .... drilling
Critchlow, Critchlow .... rig
Perisol, Phillips No 2 .... rig
Renfrew, White & Co No 3 300
McKee, Sutton, Jennings & Co .... drilling
Jamiesonville, Simcox & Myers .... rig
David Mobly, Sugar Creek Oil Co .. 1000
Minteer, Owen Brody .... rig

St. Joe.

Widow Martin, Campbell & Murphy drilling
Widow Witt, McGuire & Co (fishing) .... sand
Lane, P C L & P Co .... drilling
Mullegan, McTamany & Co .... rig
Widow Witt, Unknown .... rig

Martinsburg.

Turner, W J McKee No 7 (old) .... rig
D P Kelley, Brawley (old) .... rig
John Kelley, Kelley & Co (old) .... rig
Thos W Kelley, Conley Oil Co (old) rig
Abner Kelley, Mildren & McKissock 500
R H Campbell, Campbell & Younken 100
Stevenson, Stevenson & Bowser .... rig

Thorn Creek.

——, Shutter & McBride 10 0
Maharg, J N Bolard .... sand
McClung, Wm Fleming 300

New rigs 20
Old rigs 9
Drilling 48
Total 77

Washington.

Gordon, P L & H Co No 3 (old) .... rig
" " No 4 1350
Hess, " No 1 (for gas) .. 2070
McLane, " No 1 (gas) 2185
Farley, " No 2 (fishing) .. 1000
Taylor, " No 1 1300
Morgan, " No 1 (for gas) .. rig
Weaver, Citizens' Oil & Gas Co No 2 (old) .... rig
Weirich, Vandergrifts No 2 600
Mrs Curry, " No 1 800
I Wilson, " (old) .... rig
Wm Barre, " No 1 1600
" " No 2 1600
Johnson, " .... rig
Hall, " No 2 400
Taylorstown, Vandergrifts 1000
Taylor, Union Oil Co No 1 1700
" " No 2 .... rig
Mrs Clark, " No 1 50
Weirich, Coast Sons & Co No 1 2300
Wylie, " No 1 900
Lynn, " 1200
Hayes, " 2100
Nazer, " 900
Clark, Thayer Oil Co No 2 2000
" " No 3 100
" " No 4 .... rig
Brownlee, Hallam & Co (old) .... rig
Clark Heirs, " 1000
Barre, Pew & Emerson No 1 (old) .. rig
Smith, Belmont Oil Co No 2 (fishing) 2000
" " No 3 250
Cameron, " No 1 400
" " No 2 300
" " No 3 200
Harry Shirls, Harry Shirls 1800
Lone Pine, Caldwell & Co 1300
Reed, (near Wyland Station) Asso'd Prod Co 1300
Zelt, A P Co & Union Oil Co (old) .. rig
Mince Heirs, Isaac Willetts No 1 1500
" " No 2 1650
" " No 3 1000
" " No 4 1000
" " No 5 1200
" " No 6 .... rig
McGovern, E M Hukill & Co 800
J Manifold, Pew & Emerson No 2 .. rig
Kountz, Pew & Emerson No 1 1500
" " No 2 1300
Wylie, Pew & Emerson No 1 .... sand
Miller, Pew & Emerson No 1 100
Wilson, Stettheimer Oil Co 700
Humbert, Wm Munhall & Co 800
Wylie, Wm Munhall 1700
Hallam, Hallam & Sons (old) .... rig bldg
Byers, R O Meldrum & Sons 600
Andrews, Wilson, Brenneman & Co 600
Parsill, Fisher Oil Co 300
Wade, B B Campbell & Co 900
Lizzie Magahaey, Roth, Peffer & Dyer 900
Taylor, Galligan & Young .... rig
Glenn, Robbins & McKinney & Co .. 800
Shrontz, Nail Oil Co 200
West Alexander, Vandergrift & Co No 1 1700
W J Mince, John McKeown 1600
Coal Center, B C Jackman farm, H Hornbake 600

New rigs 7
Old rigs 7
Drilling 52
Total 66

Miscellaneous.

SHOUSTOWN, ETC.

Neville Island, Geo H Dimick & Co. 1300
Montour Run, Dorrington & Co 1700
McGee Shirley & Hochstetter .... drilling
Thos Pinkerton, J S McKelvy .... rig bldg
Simpson, J M Guffy & Co and J L McKinney & Co .... drilling
Ebenezer Duncan, " .... drilling
Economite tract, Economites .... drilling
" " .... rig bldg
McCoy Heirs, Raccoon Oil Co (fishing) .... sand
" " No 2 .... rig bldg
Charles Eachel, " 1100
Wm M Reed, " (old) .... rig bldg
John Morrow, " 1200
" " .... rig bldg
Joseph Wallace, " 1200
Isaac Harper, " 400
McCain, Galey Bros 1300
Andrew Leach, Galey Bros 1050
Sam Agnew, " .... rig
Widow Stone, " .... rig bldg
McCartney, C E Lovell & Co 450
Jordan, Barton & Ackerly .... rig
Gilmore, Philadelphia Co 500
McCleaster, " 1000
——, " .... rig bldg
McCalister & Co, W L Curtis & Co. rig bldg
Jordan, H C Zeigler & Co .... rig
Todd, Raccoon Oil Co (gas) .... rig bldg
Temple, Phoenix Glass Co (gas) .... rig
Doctor, C W Townsend 1200
Baker, S M Ross & Co 800
Brady's Run, Watson & Co 3 0

Greene County.

Fordyce E M Hukill & Co No 1 1500
Gregg, " No 1 1500
Girard, " (shut down) 900
Hathaway, " (fishing) 900
Mt. Morris, " .... drilling
Longanecker, " (old) .... rig

New rigs 12
Old rigs and shut down 2
Drilling 24
Total 38

Macksburg.

WELLS COMPLETED MARCH.

J O Dutton, Allen, Ames & Co No 3 10
" " No 4 10
" " No 5 12
Reed, Chapman, Ames & Co No 2 12
A Dutton, Reeder, Payne & Co No 2 20
Widow Dutton, Bradley Oil Co No 1 15
Coal Lands, Ohio Oil Co No 18 20
" " No 21 15
" " No 28 20
Walters, Bradley Oil Co No 3 10
Gevrez, Rose No 2 40
Stone, Carlin, Golden & Buzzel No 4 10
Dutton, C Dutton & Brotner No 1 20
A Dutton, Haskell & Co No 1 15
Warren, Macksburg Oil Co No 1 15
Smithson Bros, " No 14 15
Soak Run, Sharp & Co (shallow) .... dry
Dudley, Collins & Phillips .... dry
Dyer, Boden & Aiken No 30 25
" " No 31 25
Clinedish, Capt R H Lee 2
Warren, Best Bros est 15
Patton, Tim Mullen No 6 18
E Marsh, M B McManus No 1 40
Carlisle, T N Barnsdall & Co .... dry

Wells completed 25
Production 384
Dry 3

Macksburg.

RIGS AND WELLS DRILLING MARCH.

Wharton, Hummiston & Bradstreet No 2 1000
Wickens, Henry Wickens 500
Hall & Briggs, Boden & Aiken 500
Dyer, Boden & Aiken No 32 300
" " No 33 100
" " No 34 100
Orange Patton, A C Clark Jr & Co. 1400
Atkinson, Stevens & Longfellow (fishing) No 13 800
" Stevens & Longfellow No 14 .... rig
Clark, Tim Mullen No 4 1500
" " No 5 .... rig
Patton, " No 3 1250
" " No 5 .... rig
" " No 7 1350
" " No 8 .... rig bldg
Marsh, M B McManus No 2 .... rig
" " No 3 100
Holdren, Barnsdall & Briody No 1 .. 1400
Alban, McDonald & Morton 900
Warren, Long & Mortimer .... rig
Holland, (Salem) Decker & Sons .... sand
James, St James Oil Co .... rig
Wm R Dutton, W G Decker No 1 .... rig
J O Dutton, Allen, Ames & Co No 6 600
" " No 7 600
Gevrez, C N Payne & Co No 5 1100
" " No 6 700
P H Dutton, Chapman, Payne & Co No 1 300
Shilling, Borckman & Laney No 5 .. sand
" " No 6 .... rig
Williams, Union Oil Co No 6 (fishing) 900
Geo Hupp, " No 4 1600
Coal Lands, Ohio Oil Co No 22 .... sand
" " No 23 1600
" " No 24 650
" " No 25 1400
" " No 26 300
" " No 27 100
" " No 29 .... rig
" " No 30 .... rig bldg
" " No 31 .... rig bldg
" " No 32 .... rig bldg
" " No 33 .... rig bldg
Reed, Chapman, Ames & Co No 3 .... rig
" " No 4 .... rig
A Dutton, Reeder, Payne & Co No 3 300
" " No 4 100
G Dutton, Reeder & Co No 1 200
Adam Gross, " No 1 .... rig
Widow Dutton, Bradley Oil Co No 2 1300
" " No 3 .... rig bldg
Smith & Dutton, " No 1 600
Walters, " No 4 .... rig bldg
Gevrez, Rose No 3 300
" " No 4 .... rig bldg
St John, " No 1 300
" " No 2 .... rig bldg
" Austin, Mills & Barnsdall No 1 300
" " No 2 1200
" " No 3 .... rig
Stone, Carlin, Golden & Bussell No 5 rig
George Smith, Reeder & Haskell .... rig bldg
W Warren, John Denman No 5 .... rig bldg
" " No 6 .... rig bldg
Dell, Barnsdall No 4 (fishing) 1300
" " No 6 " 1300
Gordon, Barnsdall & Clark .... rig bldg
" " .... rig bldg
Marshall, O'Day & Attleberger .... drilling
James Roff, Wharton & Co .... rig
Carlisle, (Steed farm) Hughes & Co. 1500
Olive Green, D J O'Day & Co .... sand
Dan Cherry, Bradley Oil Co 1550

Rigs 20
Drilling 44
Total 78

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	March, 1886. Wells.	Prod'n.	Dry.	February, 1886. Wells.	Prod'n.	Dry.
Scio	2	10	0	5	20	1
Alma	5	24	0	7	33	0
Wirt	12	52	3	8	54	1
Bolivar	4	23	0	1	3	0
Clarksville	10	53	2	12	92	0
Genesee	0	0	0	0	0	0
Miscellaneous	2	0	2	1	0	1
Total	35	162	7	34	202	3

BRADFORD FIELD.

Division of Field.	March, 1886. Wells.	Prod'n.	Dry.	February, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	13	70	1	14	83	1
Kendall Creek	4	36	0	3	28	0
Foster Brook	6	38	0	8	45	0
Knapp's Creek	10	44	0	6	46	0
Four Mile	3	26	0	3	28	0
Indian & Meeks Creeks	3	27	0	5	33	0
Cole Creek	7	113	0	6	90	0
Kinzua	3	35	0	2	14	0
Miscellaneous	2	0	2	3	5	2
Total	51	389	3	50	3 2	3

WARREN AND FOREST.

District.	March, 1886. Wells.	Prod'n.	Dry.	Ferruary, 1886. Wells.	Prod'n.	Dry.
Glade	13	56	5	9	93	1
Clarendon	18	108	0	21	109	0
Tiona	23	147	1	20	106	0
Cooper	4	25	1	4	6	3
Balltown	7	175	0	8	158	1
Kane	17	1650	1	14	393	3
Grand Valley, Etc	16	140	4	6	29	2
Total	98	2301	12	82	894	10

LOWER COUNTRY.

District.	March, 1886. Wells.	Prod'n.	Dry.	February, 1886. Wells.	Prod'n.	Dry.
Venango	48	1016	12	40	657	5
Clarion	30	409	6	30	478	2
Butler and Armstrong	20	504	6	20	362	9
Washington	9	378	2	4	365	0
Miscellaneous	5	47	2	5	22	3
Total	112	2353	28	99	1884	19

GRAND SUMMARY.

District.	March, 1886. Wells.	Prod'n.	Dry.	February, 1886. Wells.	Prod'n.	Dry.
Allegany	35	162	8	34	202	3
Bradford	51	389	3	50	372	3
Warren and Forest	98	2301	12	82	894	10
Lower Field	112	2353	28	99	1884	19
Total March	296	5205	50	265	3352	35
Total February	265	3352	35			
Increase	31	1853	15			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	March 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	February 28, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Scio	0	4	2	6	2	4	1	7
Alma	4	11	8	23	9	11	7	27
Wirt	12	2	12	26	16	1	16	33
Bolivar	1	5	2	8	2	3	5	10
Genesee	1	11	3	15	2	10	2	14
Clarksville	14	5	11	30	17	5	9	31
Miscellaneous	1	0	1	2	3	0	3	6
Total	33	38	39	110	51	34	43	128

BRADFORD FIELD.

Division of Field.	March 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	February 28, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
E. and W. Branches	7	15	19	32	6	16	12	34
Kendall Creek	2	1	3	6	0	1	4	5
Knapp's Creek	9	3	8	20	6	5	11	22
Foster Brook	6	4	6	16	10	2	5	17
Four Mile	3	3	5	11	3	3	5	11
Indian Creek	5	3	7	15	3	5	5	13
Cole Creek	2	4	5	11	2	4	8	14
Kinzua	2	0	2	4	0	0	4	4
Miscellaneous	4	0	3	7	1	0	1	2
Total	40	33	49	122	31	36	55	122

WARREN AND FOREST.

Division of Field.	March 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	February 28, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	6	3	7	16	5	1	14	20
Clarendon	19	1	16	36	21	1	15	37
Tiona	30	3	24	57	24	3	17	44
Cooper	1	2	2	5	1	2	4	7
Balltown	3	0	8	11	5	0	9	14
Kane	24	5	65	94	22	7	25	54
Grand Valley, Etc	14	2	15	31	9	2	10	21
Total	97	16	137	250	87	16	94	197

LOWER COUNTRY.

Division of Field.	March 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	February 28, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	34	12	39	85	36	5	45	86
Clarion	20	5	25	50	15	9	31	55
Butler & Armstrong	20	9	48	77	19	10	37	66
Washington	7	7	52	66	15	7	46	68
Miscellaneous	12	2	24	38	15	1	16	32
Total	93	35	188	316	100	32	175	307

GRAND SUMMARY.

Field.	March 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	February 28, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	33	38	39	110	51	34	43	128
Bradford	40	33	49	122	31	36	55	122
Warren and Forest	97	16	137	250	87	16	94	197
Lower Country	93	35	188	316	100	32	175	307
Total	263	122	413	798	269	118	367	754
Total Feb. 28	269	118	367	754				
Difference	6	4	46	44				

March Production Report.

Reports of the stocks on hand at 6600 Bradford wells showed an average decrease of three and one-tenth barrels to the well during March:

Time.	No. Wells.	Gross Stocks.	Average per well.
April 1, 1886	6,605	346,291	52.4
March 1, 1886	6,600	366,499	55.5
Difference	5	20,208	3.1

The number of wells in the Bradford field connected with the pipe lines on the first of April is estimated at 13,860. Estimating the entire Bradford region on the basis of three and one-tenth barrels decrease, the total decrease in stocks at wells during March was 42,966 barrels, a daily average of 1386 barrels. Substracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for March is as follows:

	Barrels.
Average Daily Pipe Line Runs	29,333
Average Daily Decrease of Stocks at Wells	1,386
Bradford's March Production, estimated	27,947
" February " "	28,586
Average Daily Decrease	639

THE ALLEGANY FIELD.

The Stock reports of the Allegany field are summarized as follows:

Date.	No. Wells.	Gross Stocks.	Average per well
April 1, 1886	1,036	36,251	35.0
March 1, 1886	1.072	40,870	38.1
Difference	36	4,619	3.1

The wells from which reports were received had an average decrease of three and one-tenth barrels to the well during March. With 4075 wells in the field on the first of April, these figures give a total decrease for the field of 12,632 barrels, or an average decrease of 408 barrels. Substracting this decrease from the average daily pipe line runs 6545, the remainder, 6137, will represent Allegany's daily production during March. The February average was 6651 barrels.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Mar. 1.	No. Wells Apr. 1.	Average per well Mar. 1.	Average per well Apr. 1.
Clarendon and Tiona	222	227	32	29
Cherry Grove	22	22	56	43
Cooper District	148	151	50	44
Thorn Creek	35	85	149	139
Lower Country	122	124	63	53
Miscellaneous	151	153	113	97

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on yield for February and March is as follows:

Field.	March. Barrels.	February. Barrels.
Bradford	27,947	28,586
Allegany	6,137	6,651
Outside Runs	25,680	22,603
Total	59,764	57,840

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, run 1897 barrels a day in March and 1775 barrels a day in February.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63.444	64,404
April	32,442	38,810	11,848	13,742	19.162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65.018	69,445
June	33,753	35,279	11,108	13,499	19,977	18 330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63.876	67,981
November	31,789	35,026	8 642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22.918	18.428	60,627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32 378	7,196	11,607	19.800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33.922	7,049	11,547	21,225	19,549	55 505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	2 ,870	56,721	66,119
August	29,858	33,353	7,065	10 384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23.161	22,762	60,088	63 876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29, 16	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,58	27,051	3.651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59,764	53,709

THE MACKSBURG FIELD.

SUMMARY OF STATISTICS TO APRIL, 1886.

While the tide of active operations in the Pennsylvania petroleum regions has been ebbing backwards from its northern frontiers and once more traversing the ground neglected in the mad rush that so hurriedly pushed the Bradford field into prominence the Ohio operator has not been sleeping. The Lima and Findlay fields have afforded but slight attractions for the conservative oil producer, who, unacquainted as yet with the peculiarities of a lime rock horizon, pins his faith on the "sands" that have been the study of his lifetime. The deep salt water sands of Macksburg or Washington have few terrors for him when once the existence of the oil rock has been demonstrated, and with heavier casing and more of it he boldly wrests from old Mother Earth the secret treasures which she has guarded so long and so faithfully.

The development of the Macksburg field has progressed steadily since the beginning of 1884. On the 1st of January, 1886, there were 306 producing wells in the field. Fourteen more were completed in January, nineteen in February and twenty-four in March, making a total of 363 on the 1st of April. The list of completed wells, with the March operations, will be found elsewhere in this book. The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1st, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1924
February	49,694	7000	2025
March	58,795	7000	2122

During the month of March there was considerable wild-catting going on at various points around the Macksburg field. D. J. O'Day, Attleberger & Co. drilled a well on the Solomon Walters farm, between Olive Green and Sharon, in the western part of Noble county. The well was drilled into the sand March 21st, was mystified for a time and has since been reported dry. Barnsdall & Spellacy completed a dry hole in March on the W. W. Collins farm, about nine miles northeast of Macksburg, near the hamlet of Carlisle. Some time in the Fall of 1885 Hamilton & Co. drilled a well on the J. H. Smith farm to the Macksburg sand and have not since disclosed its showing. On the 21st of March Penn, Robinson & Hughes were drilling at a depth of 1300 feet on the Steed farm, three and a half miles southeast of the well on the Smith farm and over the line in Monroe county. "Daddy" Decker, one of the pioneer operators in the Ohio oil field, has lately finished a dry hole on the

G. Holland farm, one mile due north of Salem. It was located about midway between a dry hole drilled on the Schram farm and one sunk on the True farm by Payne & Co.

The rather large amount of new work in the Macksburg field is found on the streak which has been traced out from the main belt or field in a southerly direction through and west of the town of Elba. Along Duck Creek, less than a mile above Elba, wells have been completed which started at 100 barrels. Operators are looking for an extension of this prolific streak still further to the southward from its present terminus near Elba. The O'Day & Attleberger well on the Marshall farm about 1500 feet in advance of developments at Elba is quite an important test for the country immediately southwest. At the close of March there were 29 new rigs and 44 wells drilling in the field, a total of 73.

Natural Gas Notes.

At a general meeting of the stockholders of the Philadelphia Company, May 26th, a vote will be taken on the question of increasing the capital stock to $6,500,000. The regular monthly dividend of 1 per cent. was declared by this company on the 14th of April. A number of shares were sold on the 10th at 52.

The Ohio Gas and Fuel Company and the Ohio and Pennsylvania Natural Gas Company, both corporations organized for the purpose of bringing natural gas into Youngstown, Ohio, have consolidated under the name of the Ohio Natural Gas Company, with a capital stock of $100,000. The first company gets $53,000, and the second $47,000 of the stock. The National Tube Works, of McKeesport, Pa., will furnish the pipe for the company's lines, and it is expected that natural gas will be delivered to the city within ninety days.

The Northwestern Pipe Line Company, of Ohio, is the name of the corporation that expects to supply Toledo, with natural gas from the Findlay field, unless territory nearer by is discovered. It will sink a well at once near Lime City, in Wood county. It is figuring as a pipe line between Findlay and Toledo, forty-four miles in length, that will cost $30,000 a mile.

The Fossils of the Bradford Sand.

Mr. C H. Snively, of Derrick City, recently forwarded Prof. Lesley, a collection of fossils from the Bradford sand-rock, which elicited the following response. Mr. Snively takes a great deal of interest in the subject of Bradford field geology, and has enjoyed unequalled facilities for collecting specimens from rocks buried far below the surface of the earth:

Mr. C. H. Snively, Derrick City, Pa.,

DEAR SIR:—I have been waiting to acknowledge the receipt of your interesting box of fossils in order to say something definite about them. I trust that you will continue your researches, and I will do all I can to help you. You reason very justly on the facts, although you have made one mistake at which I am not surprised, viz.: taking a spirafer for a nilobite. There are no nilobites in your collection. We have sliced the specimens to get out a greater number of shells, many of which were concealed in the specimens, showing at their surface only plants. We have also photographed the fine crinoid stem (stem of a stone-lily coral from bottom of well No. 4).

Your reasoning about the running up of the stem from the slate into the overlying sandstone is very acute and holds good in the case of the standing trees in the coal measures. But in this case it is not conclusive, because the hole is so small, and chiefly because these crinoid stems often take on that appearance when entirely enclosed in the same kind of rock. This one is colored with iron from infiltrating waters. Before I am done with it I will have one end of it ground off and examined under the microscope to see its internal constitution.

The big spirafer is especially important, as you say, it forms a regular horizon in the rocks as a distinct and recognizable bed at a known distance vertically about the top of the Bradford sand. I wish you could give me a list of places in regular order on the map where this bed is visible on the surface so far as you know it to be actually a fact, and omitting all doubtful cases? I should expect such outcrops to be confined to a very small district, say two or three miles; but in this case you may perhaps have made the discovery of a more extensive outspread.

The little shells in such abundance from well No. 1, mixed with seaweed, seem all of them to belong to one species, a small orthis, probably spirifera mesostrialis, a well-known shell of the Chemung rocks, and this settles the question of the Bradford oil coming from the Chemung; but it leaves the question unsettled whether the Venango oil sands ought to be called Chemung or Catskill.

The great number of what looks like seaweeds is important, because it strengthens my argument that the oil is a decomposition of the soft tissues of sea-plants, shells and corals, embedded in the oil sand itself; and that it has not been distilled from greatly underlying rocks and condensed in the oil sands, as a few geologists have thought possible.

I will be happy to answer any questions.

Yours very truly,

J. P. LESLEY, per H. V. L.

Natural Gas for Wheeling.

Two companies have been formed with the object of supplying Wheeling, West Va., with natural gas, which are known respectively as the West Virginia Company and the Wheeling Natural Gas Company. Captain Vandergrift, W. S. Batchellor, and other Pittsburgh capitalists are backing the first named. Its line leaves the National road, two miles west of West Alexander, and proceeds by a straight line to the McMannis well, near Taylorstown, passing north of Claysville. At the McMannis it makes a slight angle and runs straight to the gas field in Mt. Pleasant township. This company will also construct a ten-inch line to Steubenville and other towns on the Ohio river, from the Hickory gas district, in Washington county; its length will be about twenty miles.

The Wheeling Natural Gas Company was organized in Pittsburgh, March 30th, with the following officers: William Flinn, President; J. M. Guffey, Vice-President; L. Halsey Williams, Secretary; C. B. McLean, Treasurer, and the Board of Directors are Messrs. Russell Hubbard, C. W. Brockurmier, N. S. Whittiker, of Wheeling, and C. D. McLean, T. Harte Given, John N. Neeb, Chris. L. Magee, L. H. Williams and Robert C. Elliott, of Pittsburgh. The capital stock is $500,000. The company has under lease 400,000 acres in this State and West Virginia. It will supply gas to Martin's Ferry, Bellaire, Wheeling and Bridgeport. Its stock is also largely held in Wheeling by the local manufacturers' company, and it had more offers to subscribe for its stock than could be accepted. The line of this company will run directly from the gas territory in Mt. Pleasant township, to a point on the Ohio river, opposite Martin's Ferry. This line crosses the West Middletown road at Tartown. The pipe will be laid under the river bed to Martin's Ferry, thence down the west bank of the river to Bridgeport and Bellaire, and then will recross to Benwood and Wheeling. Both lines will be laid this spring.

AVERAGE DAILY RUNS BY DISTRICTS, INCLUDING MACKSBURG—1882–86.

	Bradford	Allegany	Cherry Grove	Cooper	Baltown	Wardwell	Baltbridge	Cogley	Macksburg	Kane	Washington	All Other Fields	Total
1882.													
January	55,006	7,222	----	----	----	----	----	----	----	----	----	11,541	73,769
February	63,313	9,512	----	----	----	----	----	----	----	----	----	10,722	83,547
March	58,078	14,760	----	----	----	----	----	----	----	----	----	10,894	83,732
April	53,108	17,622	----	----	----	----	----	----	----	----	----	10,395	81,125
May	55,955	19,522	218	----	----	----	----	----	----	----	----	11,262	86,957
June	56,016	22,765	3,037	----	----	----	----	----	----	----	----	13,968	95,786
July	52,456	23,884	8,655	----	----	----	----	----	----	----	----	19,311	104,306
August	49,711	20,814	24,315	----	----	----	----	----	----	----	----	10,985	105,825
Septem	46,585	16,387	2[illegible],002	----	----	----	----	----	----	----	----	10,567	96,541
October	42,107	19,964	9,363	120	----	----	----	----	----	----	----	14,286	85,840
Novem	41,404	16,993	4,886	294	----	----	----	----	----	----	----	10,012	74,589
Decem	39,580	14,020	3,180	558	87	----	----	----	----	----	----	14,993	72,419
1883.													
January	36,487	14,106	3,313	1,632	334	----	----	----	----	----	----	8,893	65,125
Februa'y	38,481	13,154	2,954	1,475	332	----	----	----	----	----	----	8,812	65,208
March	37,754	12,619	2,706	1,737	368	----	----	----	----	----	----	9,220	64,404
April	38,810	13,742	2,604	3,802	840	----	----	----	----	----	----	9,409	69,207
May	39,039	13,793	,2207	3,829	952	----	----	----	----	----	----	9,625	69,445
June	38,614	13,499	2,215	4,199	1,961	----	----	----	----	----	----	9,955	70,443
July	36,489	12,381	1,891	3,467	1,944	----	----	----	----	----	----	9 456	65,628
August	37,165	12,743	1,935	3,166	3,078	----	----	----	----	----	----	10,790	68,877
Septem	35,894	12,358	1,612	3,200	3,723	----	----	----	----	----	----	9 423	66,210
October	35,654	12,757	1,312	3,314	4 298	----	----	----	----	----	----	10,314	67,649
Novem	34,516	12,332	1,000	3,251	3,807	----	----	----	----	----	----	10,285	65,281
Decem	32,650	11,752	1,061	2,876	3,766	----	----	----	----	----	----	10,725	62,830
1884.													
January	31,020	11,018	767	2,908	2,838	----	----	----	86	----	----	9,657	58,264
Februa'y	33,987	12,025	968	3,743	2,816	----	----	----	51	----	----	11,034	64,624
March	33,049	11,777	1,001	4,631	2,813	----		----	86	----	----	11,319	64,676
April	34,370	12,261	1,039	4,229	2,399	475	844	----	113	----	----	10,176	65,906
May	34,946	12,193	968	3 468	2,260	1,015	1,061	----	136	----	----	10,777	66,824
June	35,701	11,672	845	2,985	2,250	2,042	969	----	211	----	----	10,886	67,561
July	34,718	11,114	523	2,476	2,471	4,277	889	----	249	----	----	10,234	66,951
August	33,782	10,384	665	2,046	2,189	6,485	843	----	258	----	----	10,6 4	67,254
Septem	33,449	9,989	653	2,155	2,115	4,056	2,644	----	334	----	----	10,891	66,286
October	31,500	8,802	446	1,811	1,781	2,201	6,034	----	350	----	----	10,489	63,414
Novem	29,552	8,642	423	1,302	1,401	1,346	9,493	----	431	----	----	9,592	62,182
Decem	30,632	8,193	407	1,246	1,189	979	8,730	----	315	----	----	10,367	62,058
1885.													
January	27,254	7,442	360	1,214	810	977	6,199	----	384	----	----	9,034	53,674
Februa'y	27,480	7,696	327	987	910	663	7,349	----	637	----	----	9,564	55,613
March	26,833	7,342	373	867	954	605	7,239	----	875	----	----	9,585	54,971
April	29,557	7,738	299	1,114	775	527	9,333	----	1,189	----	----	11,019	61,551
May	28,443	7,467	343	1,053	902	722	7,488	127	1,557	----	----	10,879	58,981
June	30,662	7,680	439	1,000	1,044	764	5,905	609	2,233	----	----	11,983	62,319
July	30,657	7,363	467	906	1,032	647	3,856	1,220	2,441	----	----	10,283	59,872
August	29,291	7,102	363	923	930	----	2,268	2,115	2,382	----	----	12,731	58 105
Septem	30,151	6,647	312	918	944	----	2,[illegible]21	3,244	2,270	----	----	13,830	60,337
October	30,828	7,[illegible]81	428	777	925	----	1,898	4,9 9	2,053	----	----	14,194	63,123
Novem	29,117	6,667	303	707	1,030	----	1,469	5,416	2,031	----	----	14,162	60,902
Decem	30,376	6,738	442	749	1,182	----	1,420	5,241	1,971	96	----	14,[illegible]54	63,269
1886.													
January	27,966	6,235	306	623	1,063	----	1,288	4,469	1,768	70	----	14,398	58,186
February	27,499	6,361	305	571	1,056	----	1,218	3,969	1,775	435	497	14,552	58,238
March	29,333	6,545	353	653	1,059	----	1,369	3,847	1,897	1,252	900	16,247	63,455

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	MARCH, 1886.	FEBRUARY, 1886.
National Transit Co	1,635,755 25	1,37[illegible],166.72
Tidewater	193,761.56	170,625.44
Octave Oil Co	3,390.32	3,522 65
Charley Run	------	------
Shaffer Run	184.00	------
Franklin (limited)	8,540.34	5,303.42
Pittsburgh Pipe Line	20,782.54	15,437.11
Southwest Pennsylvania	27,897.29	13,926.34
Total	1,908,314.30	1,580,981.68
Daily average	16,558.53	56,463.63

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	MARCH, 1886.	FEBRUARY, 1886.
National Transit Co	1,809,622.22	1,785,992.52
Tidewater	197,270.32	187,652.89
Octave Oil Co	3,390 32	3,80 .42
Charley Run	------	------
Shaffer Run	205.73	268.46
Franklin (limited)	3,029.62	2,379 24
Pittsburgh Pipe Line	20,782.54	10,169.64
Southwest Pennsylvania	15,429.57	2,356.00
Total	2,049,730 32	1,992,[illegible]24.17
Daily average shipments	66,120.33	71,165.15

In the above shipments only the oil delivered to refiners is included.

Daily excess of shipments over runs, March 4,561 80
Daily excess of runs over shipments, February 14,701.52
Daily excess of shipments over runs, January, 1886 ..... 7,825.68
Daily excess of shipments over runs, December 7,677.75
Daily excess of shipments over runs, November 2,790.41
Daily excess of shipments over runs, October 5,064 07
Daily excess of shipments over runs, September 13,138.62
Daily excess of shipments over runs, August 11,099.01
Daily excess of shipments over runs, July 5,959.01
Daily excess of shipments over runs, June 7,992.05
Daily excess of shipments over runs, May, 1885 ..... 10,502.60
Daily excess of shipments over runs, February, 1885 ..... 9,483.63
Daily excess of shipments over runs, January, 1885 ..... 4,893.51

NET STOCKS.

PIPE LINE.	MARCH 31, 1886.	FEBRUARY 28, 1886.
National Transit Co	31,307,831.09	31,471,715.64
Tidewater	1,304,334.87	1,310,872 28
Octave Oil Co	4,449,64	3,709 48
Charley Run	------	------
Shaffer Run	23,828.87	22,784.80
Franklin (limited)	38,895 61	33,384.89
Pittsburgh Pipe Line	31,219.91	5,267 47
Southwest Pennsylvania	------	------
Total	32,710,559.99	32,847,734 56

Stocks decreased March 137,174 57
Stocks decreased February 436,146 69
Stocks decreased January, 1886 ..... 255,156 35
Stocks decreased December 255,320.70
Stocks decreased November 109,187.52
Stocks decreased October 184,393 91
Stocks decreased September 408,862.12
Stocks decreased August 390,529.99
Stocks decreased July 215,947.71
Stocks decreased June 356,849 49
Stocks decreased May 565,252 48
Stocks decreased April, 1885 ..... 42,525.72

	RECEIPTS.	DELIVERIES.
Daily average March	61,554	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,134
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,901	67,893
Daily average May	57,135	67,637
Daily average April, 1885	60,362	60,856

Illinois oil 666] Coal 550
*Coal mine used as an oil tank

The Use of Oil in Storms.

The last supplement to the *Pilot Chart* of the North Atlantic Ocean gives the following recommendation in regard to the use of oil, particularly for the benefit of fishing vessels and others that may have to anchor on the open coast:

Capt. D. G. Patterson, of East Boston, writes to the office as follows: When a vessel of any kind has to be anchored in an open roadstead, when there is danger in a gale, she should have a buoy rope to the crown of her anchor strong enough to weigh the anchor, and a few fathoms more in length than the depth of the water, on the other end of which should be a good buoy, with a bull's-eye or thimble attached with a line run through, both of the ends of which are kept on board the vessel. In case of rough weather the ends are bent together and an oil bag hauled out to the buoy. It does not matter how the current runs, the oil will be to windward of the ship and prevent the seas from breaking on board. In case of the chain parting the buoy rope would be found a convenient means of recovering the anchors.

A similar method for getting the oil to windward has been recommended to fishing vessels by the officers in charge of the branch hydrographic office at Boston. As fishermen are usually anchored in deep water and riding to a long scope of cable, it would be necessary to attach the thimble to the cable, so that when veered to the proper scope the oil reservoir would be about one hundred feet ahead of the vessel.

Khulow's German Trade Review furnishes the following example:

The Hamburg steamer Bohemia, Captain K. Karlowa, which sailed from Cuxhaven to New York on the 13th ult. with a cargo of 3000 tons and 230 passengers, reports successfal experiments in pouring oil on the troubled waters. The vessel had a rough passage. At midnight on February 24 it was found necessary to stop the engines and let the ship drive in order to prevent pitching, heavy seas breaking over her frequently. At this time the captain caused five bags filled with oil to be hung on the windward side of the vessel in the water, soon after which the ship lay well and took no more water. Next day another terrific storm occurred and the same experiment being tried—the stopping of the engines and the hanging out of bags of oil—equally satisfactory results were secured. The consumption of oil during twenty-three hours was 130 pounds, while the engines saved at least thirty-five tons of coal, while neither lubricating oil nor tallow had to be used. Captain Karlowa in his report says that the quieting of the sea by means of oil is a plan of untold value for heavily-laden vessels. The crew on deck during the storm were able to do necessary work, which but for the use of oil could only have been done at the peril of limb and life.

Recent Oil and Gas Incorporations.

The Sunbury (Pa.) Prospecting Company. Capital stock, $3,000.

The Nail City Gas and Oil Company, Wheeling, W. Va. Lewis Jones, President.

The Mystic Oil Company, New York city. Capital stock, $350,000. W. W. Eastman, 149 Broadway, and others, incorporators.

The Plymouth Natural Gas, Oil, Fuel and Supply Company, Plymouth, O. Capital stock, $10,000. Geo. B. Drennan, and others, incorporators.

Ten-Mile Oil and Gas Company, of Washington county, Pa. Capital stock, $10,000. Directors, I. Lehman, Pittsburgh; Robert McKeever, Isaac Sharp, Wm. Sharp, James Kentz, Washington.

Phillipsburg Gas Company, Beaver, Pa. Capital stock, $60,000. Directors, Edward Kane, W. F. Miller and Joseph Brown, Beaver; A. Howard, Wilkinsburg; E. P. Ebbart, Pittsburgh.

The Penn Oil Manufacturing Company has been chartered in Philadelphia, with a capital of $10,000, for manufacturing lubricating oils, etc. The stockholders and officers are A. R. McHenry, E. B. Orne, Jr., W. P. Logan, W. H. Magoffin, H. Y. Arnold and A. H. Logan.

The Torrens Gas Company, of East End, Pittsburgh, has been chartered. Capital stock, $25,000. The directors are Finley Torrens, President; James Fitzsimmons, Secretary; John S. Davison, Treasurer. The company's charter empowers it to pipe gas into Westmoreland, Cambria, Indiana and Allegheny counties.

The United Gas Fuel Company, composed of J. M. Guffey, W. S. Guffey and A. W. Mellon, have disposed of their franchise and plant, consisting of 6000 acres in the Cannonsburg field, and a 12-inch main running to Pittsburgh to the Pennsylvania Gas Company. The latter company was recently organized by Eastern capitalists. Ten miles of the line have been completed and the United Company is under contract to have the balance finished by May 10th. The formal transfer will be made June 1st.

A charter for a new natural gas company was filed in the Recorder's office of Westmoreland county, March 31st. The company will be known as the Bellevernon Heat and Light Company. The capital stock is $10,000, divided into shares of $50 each. It expects to sink wells in both Rostraver township, Westmoreland county, and Washington township, Fayette county. The places to be supplied will be Bellevernon, Gibsonton and other near towns, with office at Bellevernon. Among the stockholders are Robert Schmertz and W. E. Schmertz, of Pittsburgh, and S. F. Jones and Robert J. Linton, of Bellevernon.

An Illinois Field.

Sam Galey, of Galey Brothers, who has just returned from St. Louis, Mo., says there are nine wells in all near Lichfield, Ill., about forty miles east of St. Louis. Of the nine wells six are oil wells, of which five produce four barrels of oil per day collectively, and the other one about three barrels. The other three wells are gas wells, and are described by Mr. Galey as being about the size of the Grazier wells at Remington, this county, which are so small that no notice is paid them any more. The operator's name is George Vanvleck The nine wells are located within a radius of about 100 acres. Territory is cheap, but Mr. Vanvleck is not taking up much. The oil is heavy and black, resembling tar in appearance, and according to Mr. Galey is the finest lubricating oil yet discovered; it is of 32 deg. gravity and sells for $4 per barrel at the wells. A faint odor of petroleum is noticeable on it. It is found at a depth of 666 feet, and 600 feet of casing is required in drilling a well. There is a 6-foot vein of coal found at a depth of 550 feet, and while seeking for a vein still lower down this vein of oil was discovered by Mr. Vanvleck eight years ago. It filled the hole and flowed into the coal bank ever since, completely filling it and turning it into a huge oil tank, in which now Mr. Galey thinks there are thousands of barrels of oil. The Chicago, Burlington & Quincy Railroad have the bank leased for a handsome consideration and use the oil for car-wheel grease, dipping it out as they need it.—*Commercial Gazette.* *

Fine Specimen of fluorescence

THE SOUTHERN OIL FIELD.*

Geographically, it includes Southwestern Pennsylvania, Southeastern Ohio, West Virginia and Eastern Kentucky. The new field can be said to commence at a line drawn eastward from the Thorn Creek field to the Allegheny mountains, and westward from the same field to the Cincinnati axis. The line running eastward from Thorn Creek will pass through the counties of Armstrong, Indiana, and Clearfield, taking in all of Armstrong county south of Kittanning, almost all of Indiana county, and the southern tier of townships in Clearfield county, and in Ohio will pass through the counties of Columbiana, Stark, Wayne, etc.

Geologically it lies in the great synclinal trough of the Allegheny coal basin. This basin lies between the Allegheny mountains on the east and the Cincinnati axis or arch on the west, and extends from the lake regions in a southwesterly direction through Tennessee, including within its boundaries Western Pennsylvania, Eastern Ohio, West Virginia and Eastern Kentucky.

The Cincinnati arch referred to enters the State of Ohio from the south, at a point on the Ohio river, a few miles east of Cincinnati; it passes through the State in a northeasterly direction, and enters Lake Erie near the western end of Sandusky bay. The "arch" is described by Prof. J. S. Newberry as follows: "A great fold of the strata raised at the close of the lower Silurian age, when it formed two islands, one in Tennessee, the other in Kentucky and Ohio, around which the more recent rocks were deposited on a sloping shore."

This same formation, the lower Silurian, comes to the surface in the Allegheny mountains; from the mountains it dips to the west, from the Cincinnati arch it dips to the east, making the cynclinal trough or valley mentioned. Now, this same formation, the lower Silurian, is about 5000 feet below the surface at Pittsburgh, notwithstanding it comes to the surface at Cincinnati on the west, and the Allegheny mountains on the east, making the depression in the formation, between the points named, 5000 feet.

This basin has a considerable dip to the southwest. The petroleum reports in volume 10 of the Tenth United States Census, show that a section extending from Black Rock, on the Niagara river, in Erie county, New York, to Pittsburgh, Pa., distance 175 miles, bearing S., 20 deg. W., dip, as calculated from "Generalized Vertical Section, Plate VIII.," of same report, about 24 feet per mile.

The report just quoted also gives the following data in regard to the dip of the third Venango oil sand:

Tidioute, Warren county, Pa., to Clintonville, Venango county, Pa., bearing S. 39 deg. W., distance 39½ miles; dip, 19.7 feet per mile.

Dogtown, Clarion county, to Herman Station, Butler county, Pa., bearing S. 27 deg. W., distance 28¼ miles; dip, 22.94 feet per mile.

Tidioute, Warren county, Pa., to Herman Station, Butler county, Pa., bearing S. 21 deg. W., distance 62 miles; dip, 23 feet per mile.

From the foregoing it will be seen that 24 feet per mile is above the average of the dip of the basin to the southwest.

The general lay of the basin is northeast and southwest, following the trend of the Allegheny mountains.

The foregoing will give a fair idea of the great synclinal trough, or geological valley, within which the southern oil field lies.

Within its boundaries a geological uniformity exists that makes the whole area a probably productive territory, only differing in the points of depth to reach the same oil horizons.

The field is being rapidly developed. As an evidence of its width, the production and promising developments at McKeesport, on the east, and Shoustown and vicinity, on the west, may be cited, while Little Washington in advance shows how it is extending southwestward.

An important characteristic of this field is the numerous horizons at which oil has been found. No less than five producing sands are found, viz.: "Duffield," "Gantz," "Fifty-Foot," "Stray" and "Gordon."

Every well drilled is put down with the expectation of obtaining oil in some of these horizons, possibly all of them. Five producing horizons give five chances of obtaining a paying production in every well drilled, and for that reason is a great inducement to drill in this field, and is in itself an offset to the great cost of drilling and completing a well in this territory.

Another fact that should be borne in mind is, that underlying this whole field, and within easy reach, can be found the Warren and Bradford oil horizons, the Warren at about 800 feet and the Bradford about 1500 feet below the Gordon or third sand.

Having described the great synclinal in which this field lies, it may be well to add a short account of the local basins that are found within the field. The coal basins afford the best illustrations of these.

The bituminous coal regions of Pennsylvania cover the western third of the State, the greatest thickness of coal measures being in the southwestern corner.

Six wide parallel basins sweep around from the boundary line with New York State southwestward into Ohio and West Virginia. The summit of the Allegheny mountains, containing the lowest coals, limits the region to the southeast. An irregular line, parallel with, and thirty miles distant from the shore of Lake Erie, limits it on the northwest. The basins all gradually deepen going southwest, and all are sub-divided into smaller local basins by gentle rolls.

In one or two neighborhoods the coal beds dip as much as 30 deg., but over almost the entire area they are so nearly horizontal that a dip of 2 deg. or 3 deg. is exceptionally great. Taking the points on the Monongahela and Ohio rivers, where these basins cross, it may be of interest to trace their course to the southwest, as established by the Second Geological Survey of Pennsylvania. (See Vol. K. of the reports of said survey.) There are five main synclinals or troughs which will be enumerated and described, viz.:

First—The Lisbon synclinal, lying between the Fayette and Waynesburg axes.

Second—The Waynesburg synclinal, lying between the Waynesburg and Pin-hook axes.

Third—The Ninevah synclinal, lying between the Pin-hook and Washington axes.

Fourth—The Mansfield synclinal, lying between the Washington and Claysville axes.

Fifth—The Burgettstown synclinal. This synclinal lies northwest from the Claysville axes.

The Lisbon synclinal crosses the Monongahela river near the mouth of Muddy creek, in Cumberland township, Greene county. It passes nearly a mile southeast from Carmichaels, then through Greene township, and crosses Whitely creek, near the eastern border of Whitely township; there it is evidently thrown eastward, for it

* From pamphlet issued by Johnston & Hamilton, Brokers, Pittsburgh, Pa.

reaches Dunkard creek at a little way east from the border of Wayne township, not far below Blacksville. The precise line of this axes is ascertained with some difficulty, as along it there occurs some subordinate anticlinals, very narrow, but quite sharp, one of which is distinctly marked on Glade run, near Carmichaels. From the summit of the Fayette axes to the bottom of the trough there is an average dip of 110 feet per mile. From the crest of the Waynesburg axes to the bottom of the trough the average dip is about 70 feet per mile.

The Waynesburg synclinal crosses the Monongahela river near the mouth of Pigeon creek, crossing through Carroll, Fallowfield and Somerset townships, Washington county, where it is closely followed by the channel of Pigeon creek, it passes a little east from Bentleysville, and enters West Bethlehem township, Washington county, where it crosses the north fork of Ten-Mile creek, near Zollarsville. Beyond that locality it becomes very shallow and is traced with difficulty.

In Greene county, crosses Ruff's creek, near the eastern line of Washington township; Ten-Mile, near the mouth of Brown's Fork, and Dunkard, not far from Dent postoffice, in Wayne township. It is so shallow at each of these places that its existence was ascertained only by means of leveled lines.

The Ninevah synclinal crosses the Monongahela river near Six-Mile Ferry. It is very shallow at at this point, and continues so until it reaches the Washington county line, from which point, to the extreme soutwest corner of the State, the trough is deep and very distinct.

It enters North Strabane township, Washington county, at its northeastern corner, and passes out of it near Clokeysville, into South Strabane township. It crosses the National road a little east from the village of Martinsburg, and enters Morris township near the point where Amwell, Morris and Franklin join. In Morris it passes almost directly through Prosperity. Here it is thrown eastward to coincide with the deflection of the Pin-hook anticlinal, and enters Greene county about two miles east from its true line. In that county it crosses Brown's fork of Ten-Mile about half a mile north of Ninevah; Gray's fork about a mile east from Graysville; the Dunkard fork of South Wheeling at the southeast corner of Richhill township; the Aleppo fork of the same stream, near the line of Aleppo and Springhill townships; and passes into West Virginia at the extreme southwest corner of the State.

The Mansfield synclinal crosses the Ohio river, near Nimick's Station, but is very indistinct. It crosses the Panhandle Railroad at Mansfield. In Washington county it crosses Miller's run in Cecil township, below Venice; the West fork of Chartier creek, in Chartiers township, at Connellsville; the Baltimore & Ohio Railroad, about one mile west from the eastern line of Buffalo township; Robinson's fork, in West Finley, about three miles below the village of Good Intent; and thence soon passes into West Virginia. It is exceedingly shallow everywhere.

The Burgettstown synclinal crosses the Ohio river at Hog Island. It is extremely shallow. It crosses Racoon creek below the mouth of Tramp run, Big Traverse run near Keifer's mill, and reaches Washington county near Frankfort. South of this it is evidently shifted to the east, and is well marked at the railroad, which it crosses at Burgettstown. This trough disappears southward, and cannot be found in the southern part of Smith township, nor in Cross Creek township.

NEW maps of the Kane oil field at the AGE office.

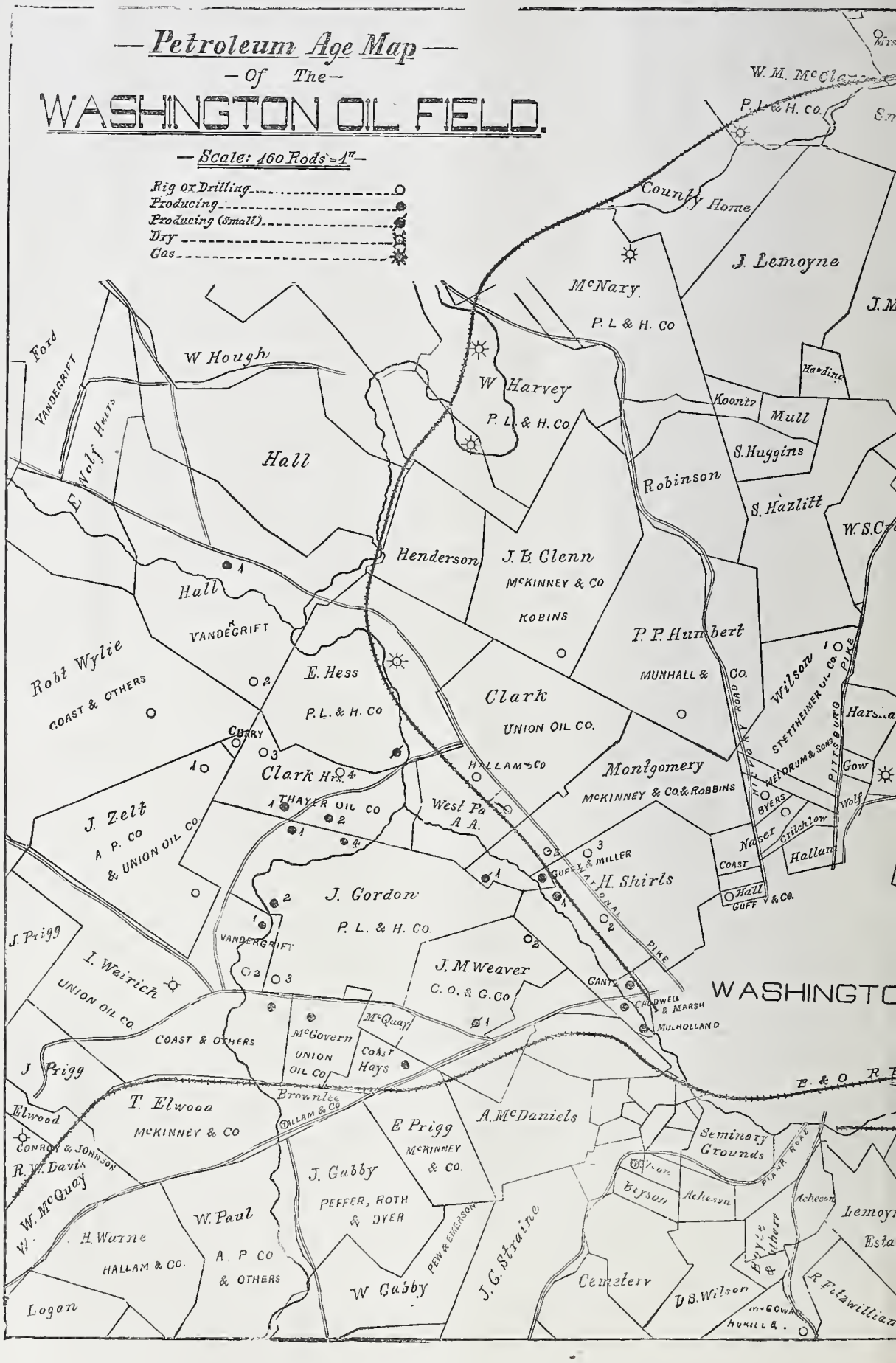
A Petroleum Engine.

A new motor, which promises to prove a powerful rival to the gas engine, has recently been introduced into this country from Germany, where it is already in considerable use. This is Spiel's petroleum engine, the working of which was recently inspected, the example being a two-horse power engine, nominal, working up to three-horse. In general appearance the petroleum engine does not differ greatly from some horizontal types of gas engines, except that it carries a small reservoir above it for the oil. In the present instance this reservoir contains two gallons and a half of refined petroleum, which is equal to a five or six hours' supply. From the reservoir the petroleum is conducted by a pipe to a pump, by which small measured quantities are injected into the cylinder of the engine. The oil is supplied at the rate of about four drops per revolution of the engine (which runs at 120 revolutions per minute), and at a given point it is ignited by means of a small spirit lamp. The *modus operandi* may be briefly explained as follows: On its outstroke the piston draws in a charge of air and petroleum, and on the return stroke it compresses this mixture, which is exploded as the crank passes the back center. The combustion and expansion of the charge take place at the third stroke, the products of combustion being driven out at the fourth stroke. There is thus one acting stroke in every four, motion being continued during the other three by means of a fly-wheel. Vaporization of the petroleum previous to use does not take place, the engine using it in its fluid condition. In order to keep the cylinder cool it is water jacketed. The petroleum engine presents many points of advantage, being entirely independent of any coal or gas supply. It can be set in motion in a few seconds, simply by lighting the lamp and turning the fly-wheel. The consumption of oil is automatically arranged according to the work required, and when the engine is at rest there is no expense going on, an important point where the work to be done is intermittent. This engine has been thoroughly tested by Mr. John Hopkinson, C. E., who reports upon it very favorably and places its working cost at 1½d per horse power per hour for petroleum and about ¼d per horse power per hour for lubricating, when developing its full power. Spiel's engine would seem to be capable of competing satisfactorily with gas engines, even where gas is available, but beyond this there is a wide and promising field for it where gas is not obtainable, and where the steam engine is inadmissible. The petroleum engine is being introduced by a company having offices at 1 Leadenhall street, E. C.—*London Grocer.*

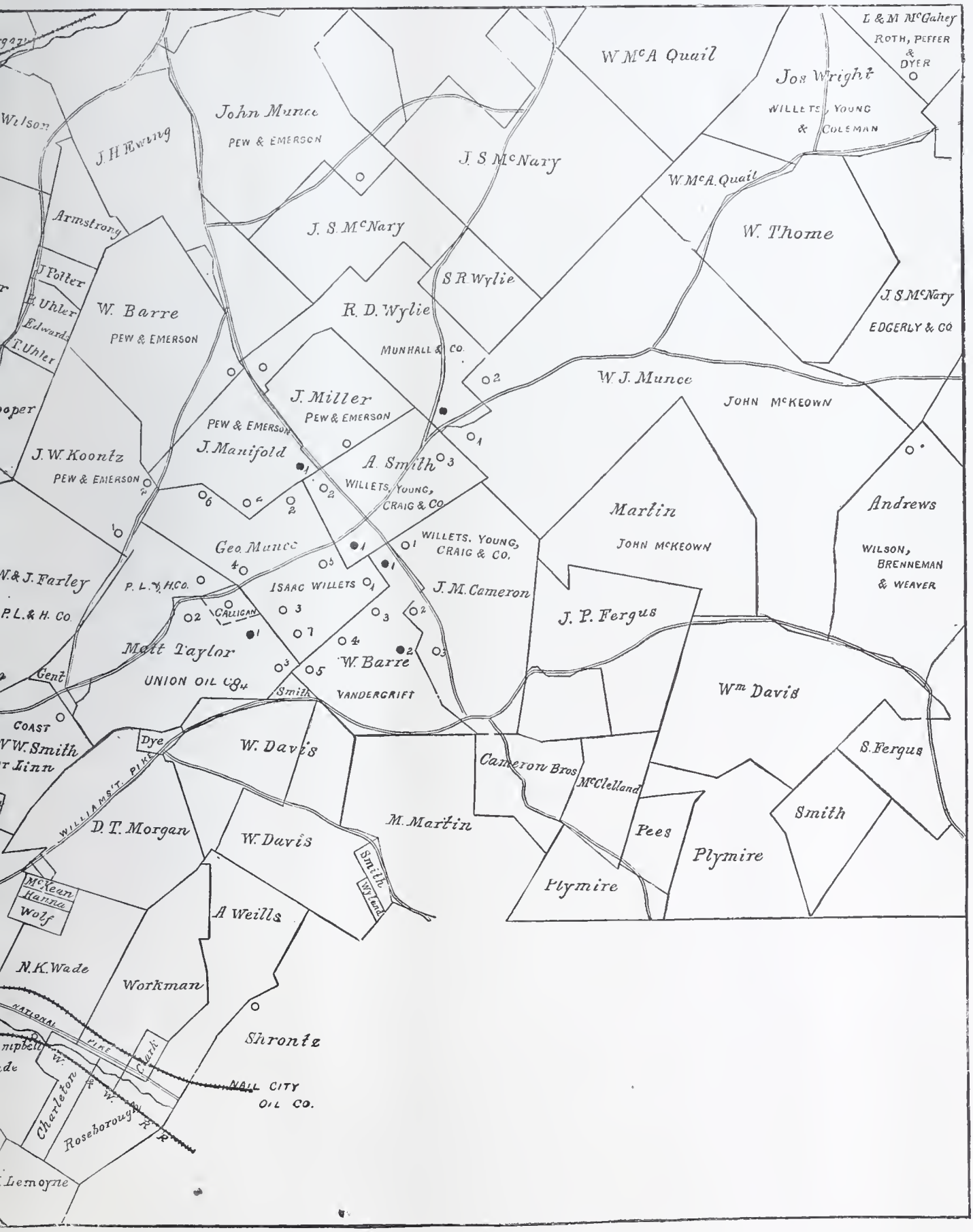
THE Waverly Oil Company, of Pittsburgh, will commence in May the removal of its works to a new and much better location, but near the present one. The new works will be rebuilt in July. As the removal will occupy some six weeks, where no oil can be made, jobbers and dealers in the special brands made by the Waverly, are asked to send in their orders at once to provide for probable wants during May and June.

THE Manufacturers' Natural Gas Company, has concluded to lay a double line of eight-inch pipes from Canonsburg to Pittsburgh. The lines will both be laid in the same pit, at varying widths, the greatest being eight feet. At intervals of four miles the pipe will be connected by cross sections of pipe of the same diameter as the main lines, in order to divert, when necessary, the gas from one pipe to another. In this manner either line may be easily repaired. From thirty to thirty-two miles of pipe will be required to lay the two lines. The Continental Tube Works, of Pittsburgh, has contracted to furnish the pipes.

SUPPLEMENT TO THE



PETROLEUM AGE, MAY, 1886.



THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., MAY, 1886. NO. 4.

THE ANTICLINAL THEORY OF NATURAL GAS.

BY H. M. CHANCE,* PHILADELPHIA, PA.

WITHIN the last few months much interest has been excited by what is known as the "anticlinal theory" of gas, a theory so simple, so plausible, and so easily understood by everyone, that its adoption by the gas producer was an almost foregone conclusion. The public has also accepted, but not so generally, the assertion that the gas exists underground under any necessary pressure as a liquid, thus accounting for the enormous quantities of gas obtained, apparently, from a small area. Some, however, explain this by supposing that the manufacture of gas is constantly going on in the formations underlying the gas sand. It has also been asserted that the gas may exist (where the rock is not porous) in crevices, and that these crevices or fissures will be found largely developed along the anticlinal axes.

On the other hand, we have the opinion expressed by Professor Lesley that gas, water and oil existing underground at great pressure will not separate, but that the gas will exist in solution, "mixed" like carbonic acid gas in a soda-water fountain. This hypothesis, if correct, is fatal to the anticlinal theory.

The anticlinal theory would also become less plausible if it were shown that the gas exists as a liquid. The difference in specific gravity between it and water might not then seem sufficient to force each through miles of pores until the hydrocarbon liquid had found its way to the crest of the anticlinal, and the water to the lower portions of the rock, since these rocks, even in the vicinity of the anticlinal axes, have a very gentle inclination, commonly less than one degree, and very rarely exceeding one degree and a half.†

We may dismiss this consideration for the present, for it will be seen further on that the gas cannot exist as liquid; but even if this were not so, time only would be required to effect separation.

The supposition of continuous manufacture in rocks underlying the gas sands is entertained by few who are familiar with the phenomena presented by oil and gas wells. The geologist is not able to deny the possibility of this state of affairs: but even if such be the case, the limited life of many gas wells as great producers is sufficient evidence that the natural production underground can only be a fraction of the rate of consumption.

However, this supposition involves the question of the origin of gas and oil, whether in the rocks forming their present reservoirs or in underlying bituminous or oleaginous shales or slates. The latter theory is popular, but encounters one fatal objection which its adherents, with surprising complacency, entirely ignore. Ascension from below implies the existence of open fissures,—these would permit the escape of gas to the surface. As stated by Prof. Lesley:

. . . . "This is the argument which weighs most in my mind against one of the popular theories entertained by geologists, that all our petroleum has ascended to the oil rocks from far greater depths in the lower formations or in the interior of the earth; for I confess myself unable to understand how the material could ascend 3000 feet or more from the Silurian or Lower Devonian rocks and there have been arrested, unable to continue its ascent through the remaining one, two or three thousand feet to the surface. In addition to this capital objection there is another, namely, that it has never been shown by any one that hydrocarbons in the gaseous form, ascending from great depths, could be condensed, or in any way changed into liquid petroleum, and held in that form ever after by the porous sand rocks."

There is no valid objection to the supposition that gas and oil have their origin in organic matter enclosed in the porous sandstones in which they are now found.

However, be the origin domestic or foreign to the producing rock, experience has shown, in the oil development at least, that the porous rock reservoir holds a definitely limited quantity, and that when this is once exhausted we may expect no further accumulation; and the history of gas wells in adjacent territory points to the same conclusion as respects gas.

Will gas and water existing underground at great pressure,—from 150 to 450 pounds per square inch, for instance,—be found "mixed," or will they separate, the gas rising to the top? The value of the anticlinal theory depends largely upon the solution of this question.

As the propane and ethane are present in small quantities, and both probably exist as liquids, which may, however, be held by the marsh gas in suspension (just as water is evaporated and held in suspension by air), they need not be here considered; and we may take the gas as a mixture of marsh gas, hydrogen and nitrogen, the former (marsh gas) in much larger percentage than the latter combined.

Marsh gas is soluble in or absorbed by water at atmospheric pressure to only about five per cent.,* that is, it takes twenty volumes of water to absorb one volume of marsh gas. The solubility of marsh gas in salt water is not accurately known, but may be still less. Hence, if 20 cubic feet of water absorb 1 cubic foot at atmospheric pressure, the same quantity of water would by *Henry's law* (*ibid.*, p. 236), absorb at 150 pounds or 10 atmospheres 10 cubic feet, or 50 per cent.; and at 450 pounds or 30 atmospheres, 30 cubic feet or 150 per cent. In other words, one cubic foot of water would absorb one and a half cubic feet of gas if compressed under 450 pounds pressure,—any excess of gas present must separate and rise to the higher portions of the rock, the

* Formerly Assistant Geologist, Pennsylvania Geological Survey.

† In feet, generally less than 100 feet per mile,—average 20 to 40 feet,—and rarely 150 feet.

* Roscoe and Schorlemmer, *Organic Chemistry*, vol. iii., pt. i., 1882, p. 608.

water sinking to the lower portions. It is thus evident that the quantity of gas held by the water is from a practical standpoint small; and that a well *piercing the rock where it is filled with salt water*, and producing a large flow of brine, could produce only one, two or three cubic feet (varying with pressure and temperature) of gas for each cubic foot of water, if the amount of gas mixed with the water were its only supply. Hence the argument, based on a supposed inseparable mixture of gas, water and oil in depth, appears to me insufficient to overthrow the anticlinal theory; for it seems certain that under all, but exceptional conditions the great bulk of gas will naturally separate from the water and rise through the interstices to the higher portions of the rock.*

I deem it unnecessary to discuss the possibility of a similar separation of oil and salt water, and of oil and gas; but I may say in general that the separation of water and oil is probably not so easily accomplished,† and will not occur so readily in territory where the dip is very slight, from the fact that any porous rock is more permeable to gas than to a liquid.

One reason why the adoption of the anticlinal theory as a guide in developing gas territory is not likely to prove altogether satisfactory, is because its adherents are apparently losing sight of the fact that gas wells may also occur in synclinals, or where there is no trace of either an anticlinal or synclinal.

We know that the porous portions of the productive oil and gas rock exist in belts and pools isolated from each other by areas of rock too fine grained and close to hold or yield quantities commercially important. The quantity of gas that may exist in any one of these patches or belts of porous rock is necessarily limited by the quantity of water present. If the rock is entirely filled with water we can expect no gas;‡ if on the other hand the rock contains no water, we may expect gas throughout the porous portion of the rock whether this be found in a synclinal or upon an anticlinal. Between these two extremes we may have any and every variable quantity of water and gas. If the water present is sufficient to fill only 25 per cent. of the voids in the rock, 75 per cent. of the area of that particular porous patch will be productive gas territory, and if one end of this reaches an anticlinal, and is punctured by wells located on the anticlinal theory, that portion *equally good for gas*, extending down the slope of the anticlinal, and reaching almost perhaps to the bottom of the synclinal, will be passed over as worthless by the strict adherent to the anticlinal theory as at present used.

The "belt-line" theory of oil was found to be true within certain limits and with certain qualifications; and any map of the productive oil districts shows that the productive (porous) streaks, belts and patches are more or less continuous along certain lines, which may be either curved or straight. This theory proved useful, and would have given better results had not its believers persistently adhered to it when and where it could be of no further use. This course was followed by so many disheartening failures that some of the most enthusiastic "belt-line" operators finally went to the other extreme and denounced it as entirely false.

As we have good reason to believe that the areas of porous gas rock will be found in patches, belts and streaks similar to the distribution of porous oil rock in Butler, Clarion and Venango counties, the belt-line theory should appeal to the gas producer as an aid in tracing out productive territory.

We have, then, the anticlinal theory and the belt-line theory, neither of which is complete or entirely sufficient in itself, but both alike valuable and useful within certain limits; and by judiciously combining these theories, it seems probable that the prospect of being able to locate good territory in advance of developments would be considerably increased. In other words, the natural gas expert will probably double or treble the chances of obtaining a good location for wells in both productive and undeveloped territory if he relies, not upon either of these theories alone, but upon the two combined.

The geologist can trace out the anticlinals by surface observations, and locate them with sufficient accuracy for all practical purposes; but in determining the trend of the porous streaks or belts he must rely upon the records of wells already drilled, just as the oil producer in the past has determined his "belt-lines" from data furnished by preceding operations. Thus by reasoning from the known to the unknown, all of the great Clarion-Butler oil belt was eventually developed.

In the same way the gas producer must learn the trend or bearing of each productive (porous) belt or rock, and trace it from point to point, the most promising locality being found where one of these belt-lines crosses an anticlinal axis.

In the area known as the Pittsburgh gas district (embracing all that portion of Pennsylvania within some forty miles of Pittsburgh), the direction of these porous belts has not yet been accurately defined. Some of the lines of porous rock will doubtless be found to vary considerably in bearing from others. The belt-lines of the Butler fields, for instance, will doubtless have a trend not parallel to that of the Murraysville district.

We must also not lose sight of the fact that some of the productive areas may be merely circumscribed pools or patches; but even in this case a knowledge of the trend of the porous patches will enable us the more readily to find other such patches of productive rock.

The oil producer is already at work defining belt-lines in the Washington field, and these lines may also be of use to the gas producer; but no greater mistake could be made than in attempting to apply them to gas developments in other districts. Each district must have its own lines of porous deposition worked out separately.

To do this thoroughly will require in each case some time and labor, but this seems insignificant compared with the interests at stake.

In attempting to define the trend of the porous belt (belt-line) it will be necessary to discriminate carefully between the different gas producing rocks; for if in one locality the gas comes from one rock, and a well in the same or different locality is producing from another—a higher or lower—gas rock, it is evident that we have two entirely independent belts to define, which may have very different trends. Thus, in the Butler oil district the "third sand" belt-line was commonly taken at about N. 22 deg. E., or N. 22 1-2 deg. E., while the "fourth sand" belt-line curved from N. 45 deg. E. at Modoc to nearly due east and west near Brady's Bend;

* For a more technical discussion of this subject, in which it is shown that the variations in composition of well gas possibly result from the operation of Dalton's law of partial pressures, reference may be had to a paper by the present writer read before the Engineers' Club, of Philadelphia, April, 1886.

† Of course the oil will rise to the upper and the water sink to the lower layers of the rock; but it seems questionable whether the water will always flow *down* a very gentle dip,—say 10 feet per mile,—and the oil rise along such a dip, if the interstices or pores of the rock are very small.

‡ Other than the small quantity, about 5 per cent., held in solution.

and the "second sand" belt at Martinsburg had a still different bearing.

This method is suggested for the Pittsburgh district as most likely to give the best results, and is applicable to wells drilling for gas in any sand from the Conglomerate No. XII., down to the Butler fourth sand; but in any development in the Catskill or Devonian rocks underlying the Venango-Clarion-Butler oil group, this method should probably be modified, or, perhaps, even dismissed; for the conditions during deposition were evidently quite dissimilar and the porous areas of these lower rocks were deposited in great broad patches of irregular shape.

Nor would this theory be of any use in the new Ohio district, where gas is obtained from the Lower Silurian rocks. I therefore limit the use of this "anticlinal belt-line" method to the search after gas in rocks not deeper or older geologically than the Venango-Butler-Clarion group of oil sands. In any other district, where a series of deposits is found exhibiting the characteristics of this group, the theory will be applicable. Hence I anticipate its successful application in all that country lying south, southwest and west of the Venango-Clarion-Butler oil field, and extending perhaps far into the Southern and Western States.

In the area north, northeast and northwest of Venango county, explorations should doubtless be based upon other considerations.

While I believe that each of these theories may be useful to the gas producer, and that the adoption of a plan which recognizes both, will be followed by better results than the adoption of one to the exclusion of the other, I do not believe them equally valuable. Of the two, the so-called "belt-line" theory seems far more promising. Stated in broader terms than as commonly understood by the oil producer, it is simply an expression of an established fact, viz., that the principal porous portions of the Venango-Butler oil gas rocks exist along certain lines of coarser deposition, and that, when we have determined the trend of a porous area, the continuation of this area, or other similar detached areas, will probably be found nearly in continuation of this general trend or "belt-line."

As the necessary prerequisite to the existence of gas or oil is an area of porous rock, this method would seem more valuable than the anticlinal method; for the latter can only be used when and where the porous rock exists. In other words these porous belts, pools and streaks can be more easily discovered by tracing them from point to point than by boring at haphazard along the line of an anticlinal axis.

Were the possibility of obtaining gas confined to one rock, the utility of the anticlinal method would indeed be small, for hundreds of wells might be drilled along an anticlinal axis without striking the point where a porous belt or pool crossed the axis; but we have also to consider the possibility of obtaining gas from more than one rock. This possibility increases the chance of success along anticlinal lines, just as it increases the chance of success in a well located at any point, whether on an anticlinal or not.

In the Pittsburgh district the first oil sand (Butler county "second" sand) of the Venango group is the principal present productive rock. It seems to have a much greater outspread and a larger range and distribution of porous areas than the underlying ("second," "fifty-foot," "third" and Butler "fourth") sands. It is perhaps also thicker than the average thickness of any one of these other sands. For these reasons, and also because it is known to be so wonderfully productive, it will probably continue to be the principal gas producing rock of this Pittsburgh district, and the chief object of search by the gas producer.

In this case, the desideratum will be to trace out its porous areas; and in prosecuting such a search, the so-called anticlinal theory can afford no assistance. *After this has been done*, that theory will, perhaps, aid the producer in so locating his wells as to avoid the water-logged areas.

I speak of this as the "so-called" anticlinal theory, because the term does not properly describe it. I understand it to be a theory that gas will rise to the higher portions of a rock, and that the salt water will be found in its lower portions. This separation must necessarily be confined to the limits of each porous belt or pool; and it may often happen that the gas cannot rise directly up the slope of an anticlinal, by reason of the rock not being porous in that direction, but may move diagonally upwards along the flank of an anticlinal until it finally reaches the centre of a synclinal. This is possible, because the anticlinals of Western Pennsylvania are not horizontal rolls, but each anticlinal and synclinal has usually a considerable fall towards the southwest, thus materially complicating the problem; for, as Mr. Ashburner has observed, some points in the synclinals may be higher than points on the crest of an anticlinal further southwest.

However, while this fact should be borne in mind, it is likely to affect only a small number of cases; since, as a rule, the rate of dip southwestwardly along the more pronounced anticlinals and synclinals is small as compared with the dip northwest and southeast from the anticlinals. But in districts where the anticlinals are not well developed, it becomes a most important consideration.

In an article published in *Science* for June, 1885, and in a later article in THE PETROLEUM AGE, (March, 1886,) Prof. I. C. White defines the "anticlinal theory" in much more specific terms, asserting that "all great gas wells are found on anticlinal axes," and denying the possibility of their existence in other locations. This definition appears to me to be in direct conflict with the known facts and with any rational explanation of gas well phenomena.

The yield of any given area of porous rock will depend upon the pressure under which the gas exists; and to explain the enormous flow from what appear to be comparatively small areas of rock, it has been frequently suggested that the gas exists as liquid. I believe the following considerations are sufficient to disprove this hypothesis:

As the gas reservoirs are nearly horizontal rocks, overlaid by nearly horizontal beds of sandstone, shale, slate, etc., it is evident that the gas pressure must be less than the weight of the overlying rocks: for whenever this pressure over a considerable area becomes greater than this, it must raise the rocks in a gentle arch, thus opening the cleavage planes and joints and forming fissures through which the gas would escape to the surface. After the pressure was relieved in this way the rocks would settle down and the fissures would eventually become closed by sediments (clay, calcite, etc.,) from percolating waters, when a secondary accumulation of gas might take place.

As these rocks weigh from 135 to 155 pounds per cubic foot, we may take 144 pounds as an average, this giving us a convenient figure for ready use, being one pound of pressure per square inch for every foot in depth; thus,

at a depth of 1500 feet the weight, and consequently the maximum gas pressure possible, would be 1500 pounds per square inch, or 100 atmospheres. The existence of much greater pressure in small circumscribed areas is possible, but would probably be accompanied by earthquake phenomena, which, so far, have not been experienced in this part of Pennsylvania.

Having then established a series of actual maximum pressures, it remains to be seen whether the gas may not exist in liquid form at or below these pressures.

The average range in composition of natural gas may be taken as:

	Per cent.
Hydrogen	5.00 to 20.00
Nitrogen	1.00 to 12.00
Marsh gas	60.00 to 80.00
Ethane	1.00 to 8.00
Propane	0.00 to 2.00
Carbonic acid gas	0.30 to 2.00
Carbonic oxide	traces
Illuminating hydrocarbons	0.00 to 1.00

Hydrogen and nitrogen require enormous pressures, and a most intense degree of cold to effect and maintain liquefaction.

Ethane is liquefied according to Dewar* at a temperature of 35 deg. C. at 45.2 atmospheres. Propane is liquefied at atmospheric pressure at a temperature of — 25 deg. C. to — 30 deg. C.,† and at normal temperature at quite moderate pressure. These gases may, therefore, exist as liquids, but being present in small quantity may be held in suspension by the other gases.

The great bulk of the gas, however, consists of hydrogen, nitrogen and marsh gas, and, of these, the latter (marsh gas) is the most easily liquefied; but Professor Dewar (*ibid*) shows that at — 99.5 deg. C. a pressure of 50 atmospheres is required, and the experiments of Callaitet‡ show, that at — 11 deg. C. a pressure of 180 atmospheres is required, the pressure increasing very rapidly as the temperature is raised.

The temperature of water and oil brought up from depths of 1000 or 1500 feet under ground, demonstrates beyond doubt that the temperature increases with the depth, and is not less than 60 deg. or 70 deg. Fahr., and may be 80 deg. or 90 deg. Fahr. In any event, the supposition of a low temperature underground is absolutely inadmissible.

The pressure necessary to liquefy marsh gas at 60 deg. or 70 deg. Fahr. is not known, but very great pressures (several hundred atmospheres) have been found insufficient to effect its liquefaction at such a temperature

Hence it appears that a pressure very much in excess of the maximum possible pressure would be required to liquefy or to maintain the liquefaction of this gas: and it therefore follows that this gas must exist in the porous reservoirs in which it is found as a gas and not as a liquid.

Having given then a maximum pressure, and knowing the maximum porosity of these sandstones (ratio of open space to the bulk of the rock), it becomes only a matter of calculation to determine the maximum possible yield of gas from a definite area of a rock of certain thickness. In an article recently published in the *Iron Age*§ I have shown how such a method can be applied in estimating the probable yield from the gas rock of the Pittsburgh district.

* London, Edinburgh and Dublin *Philosophical Magazine*, 1884, page 214.

† Stated as too high, *ibid.*

‡ Roscoe and Schorlemmer, *Organic Chemistry*, vol. iii., pt i., 1882.

§ March 25, 1886.

The following formula may be used:

$$x = {}^{*}28abtvp$$

where

x = maximum yield in millions of cubic feet.
a = area in square miles.
b = percentage of area productive, *i. e.*, porous.
t = average thickness of porous portion of rock,
v = ratio of voids or open spaces to bulk of the rock, generally less than one-sixth,
p = pressure in atmospheres.

An estimate made in this way, on the assumption of a porous rock 30 feet thick, one-sixth porosity, one-tenth of total area productive, under pressure of 750 pounds per square inch, for a district 30 miles in all directions from Pittsburgh, gave a maximum possible yield of about two million million cubic feet—2,000,000,000,000—which would all be needed to replace a consumption of coal equal to 20,000 tons daily for about eight years. In the absence of any better argument, the wonderful productiveness of some wells has been urged as a reason why such estimates cannot be true. Thus the case of the first Murraysville well has been suggested as showing a greater volume of gas than such a method would indicate. Allowing the extreme estimate of 30 million feet per day for this well, amounting to 10,950 million feet per year, for the ten years during which it has been blowing off, we have a total production of 109,500 million cubic feet. A sandrock of the above assumed thickness, porosity, etc., will yield about 7000 million cubic feet per square mile. If 60 feet thick, and under a pressure of 1000 pounds per square inch, the yield will be about 18,500 million cubic feet per square mile, requiring then all the gas from six square miles. If, however, this well is producing from a pool or belt of such a rock twenty-four square miles in area, its effect during a period of ten years would be to simply reduce the pressure from 1000 pounds to 750 pounds per square inch. It should always be borne in mind that the gas can just as easily find its way through miles of porous rock to the well, as through the miles of pipe laid from the well to the consumer, and that any one well may draw its supply from a very large area of rock.

* More accurately 27.878400.

THE new oil fields of Wyoming, in the Bingham Basin, are directly south of Billings, M. T., near the boundary between Montana and Wyoming. They are eighty miles long by forty wide. The oil is said to contain 40 per cent of mineral sperm oil, 27 per cent. kerosene, with small percentages of gasoline, benzine and naphtha. Its illuminating power is of a high order, and it is so pure that ranchmen in the vicinity have been burning it the past winter in their lamps.—*San Francisco Exchange.*

CANADIAN petroleum is quoted at 90 cents per barrel, and the total sales for the month of April, at the Petrolia Oil Exchange, amounted to 136,682 barrels. The shipments for April were 34,279 barrels. In April, 1885, they were 25,750, and in April, 1884, 31,111 barrels. Refined oil is worth 14½ cents per gallon by the carload.

STOCK of the Philadelphia Company, of Pittsburgh, which was freely offered last August at 50c. in November rose to 63c. declined in February to 53c. advanced again to 60c. and is now quoted at 49 to 50c.

THE Pennsylvania Gas Company supplies the municipal building of Jamestown with heat and light, twenty stoves and 155 lights, free of cost.

OIL REGION CHRONOLOGY.

For April, 1886.

April 1. Age Oil Report shows 297 wells completed in March, 51 of which were dry; new production, 5205 barrels; new rigs, 263; old rigs, 112; wells drilling, 412; total field operations, 797; increase over February, 43. Market opened firm at 72⅝c, went up to 72⅞c, and sold down to 71⅜c, closing at 71⅝c bid. Carrying rates—New York, 50c; Bradford, 55c; Oil City, 25 to 30c; Pittsburgh, 50c. Sixteen producing wells in the Washington field, with a daily yield of 1140 barrels. Coast well, on Hayes, after 52 days drilling, reaches Gantz sand, and shows a little gas and oil. Gordon No. 4 finds gas in the mountain sand at a depth of 1450 feet. Smith well, 423 barrels; Clark, 168; Miller & Guffey, 140. The Galey well, on the McKean lot, Shoustown, strikes sand and shows for a small well Union Oil Company's No. 1, southeast corner of lot 425, Kane, proves a heavy gasser. Mr. R. G. Lamberton attempts to move the Oil City postoffice from its present quarters to the Lamberton block, but fails to succeed.

April 2. Market opened weak at 71¼c, the lowest point of the day; highest, 72c; closed at 71⅝c. Carrying rates—Unchanged. Coast & Son's well, on Hayes farm, Washington, fills up 300 feet, from Gantz sand. Washington gauges—Smith, 417 barrels; Manifold, 135; Clark, 168; Miller & Guffey, 127. Galey Bros', well, on Agnew lot, Shoustown, through sand with light showing. Union No. 6, on 425, Kane, makes 120 barrels first fourteen hours. Craig & Cappeau's No. 11 strikes sand with good showing. A little daughter of Samuel Gibbs drowned in a tub of water at Karns City. Break in Meadville natural gas line, near Cooperstown, while lowering it in the ditch; heavy pressure of gas knocks over two Italians and one is severely injured.

April 3. Market sluggish with light trading, ranging from 71⅝c to 72⅛c. Washington wells gauge—Smith, 412 barrels; Clark, 168; Manifold, 140; Miller & Guffey, 120. Coast & Sons, on the Weirich, drilling in Gordon sand with no showing of oil. D. M. Ross well, on Widow Baker farm, near Phillipsburg, down and dry. Butler county scores five dusters, viz.: Phillips No. 2, on the Patterson; Simcox & Myers, on the Snyder, Franklin township; Campbell & Murphy, on the Martin; McCormick & Co., on the Barnhart, and Rabbit & Co., on the Rogers, in the Brownfield section. Fire at Petrolia, Butler county, Methodist church and several buildings destroyed; loss, $4000.

April 4. Sunday. House of D. L. Trax, on Deep Hollow road, near Oil City, burned to the ground, while family was absent; loss, $850.

April 5. Market opened steady at 72⅛c, fell off to 71¾c, reacted to 73½c and closed at 73⅜c. Washington gauge—Smith, 388 barrels; Clark No. 1, 168; Manifold, 130; Miller & Guffey, 118. Thayer No. 2, on Clark, strikes a good vein of gas in the Gantz sand, depth 2150 feet. Coast & Sons finish their well on the Weirich, no oil in Gordon sand, but good for 25 barrels from the Gantz. Andrews' well, on 384, Kane, in sand and showing for small well. Kane Oil Company's No. 6, on 426, makes 493 barrels first twenty-four hours. Manufacturers' Gas Company promises to supply Oil City with gas at lower rates than those of the Fuel Supply Company. Gilbert C. Ray murders his wife at Sandy Hill, near Franklin, Venango county.

April 6. Market stronger; opening at 73⅝c, with sales at 73¾c, weakened off to 72½c and closed at 72⅝c. Carrying rates 40 to 55c. Washington gauges—Smith, 410 barrels; Clark, 168; Manifold, 110; Miller & Guffey, 109. Thayer, (Clark), No. 2, gets considerable oil in 50-foot rock. Smith No. 2 strikes heavy vein of gas in the Gantz sand. The Galey well, on the Agnew, or McKean half acre, Shoustown, pumped 20 barrels oil from 9 a. m. to 4 p. m.

April 7. Market quiet; first sales at 72¾c and closed at 72⅝c bid. Washington gauges—Smith, 398; Clark, 192; Manifold, 131; Miller & Guffey, 108. Gordon No. 2, shot in Gordon sand with forty quarts, but made no response. Gordon No. 1 averaged 88 barrels a day for a week; in twenty-four hours, ending at six this evening, made 104 barrels. Thayer No. 2, on Clark, in fifty foot with small showing. Shirls, on Shirls, in Gantz sand with no oil, but lots of gas. Washington total production 1200 barrels. Forest Oil Company's No. 4, at Red Valley, down and dry. Keatley Bros. well, at Brookville, in Jefferson county, admitted to be a failure. Gilbert C. Ray arrested at Sandy Hill, Venango county, for the murder of his wife on the 5th The Northwestern Gas Company acquire the plant of the Oil City Fuel Supply Company, and in order to fight the new gas company reduce rates of one-eighth metres to 50 cents and five-thirty-seconds to 75 cents per month. Lower bridge at Oil City made free

April 8. Market steady between 72½c and 73c. Washington gauges—Smith 410 barrels; Clark, 202; Manifold, 132; Miller & Guffey, 105. Raccoon Oil Company's No. 1, on the Morrow farm, Shoustown, five feet in sand with 1200 feet of oil in the hole. Cornwall & Hasson's two wells, on the Lawley farm, directly north of the Benton gusher, at Tarkill, in the sand and showing small.

April 9. Market dull, still hanging fire between 72½c and 73c. Smith No. 1, Washington, gauges 409 barrels; Manifold, 137. Manifold well, one month old to-day, has produced 5000 barrels of oil. Union No. 11, on 425, Kane, made 153 barrels first twenty-one hours. Morrow farm well, Shoustown, makes an eleven minute flow; seven bits in sand and estimated at 30 to 40 barrels. Jesse Neeley burned to death while attempting to quench the flames at his burning house at Perrysville, near Parker.

April 10. Market a trifle stronger with quotations at 73c to 73½c. Carrying rates unchanged. Smith No. 1, 397 barrels; Manifold, 141. Seventeen producing wells at Washington gauge 1188 barrels. Smith No. 2 an immense gasser from the "fifty-foot" rock. Drilling has to be suspended. Thirty-nine producing wells at Kane gauge 2920 barrels. Lovell & Co.'s well, on McCartney farm, Shoustown, down and dry. George Welker, son of the proprietor of the Kane House, at Kane, commits suicide by shooting himself through the head.

April 11. Sunday.

April 12. Market opened with rumors that heavy boom was about to be inaugurated, and pointers that it would reach 80c this day were numerous; opened at 73⅝c and went to 76½c the first fifteen minutes, reacted to 75½c, went up to 78⅜c and closed firm at 77c. Smith No. 2, Washington, reported heavy gasser in sand where Smith No. 1 found its oil, and used by bulls to strengthen their position. Washington gauges—Smith, 371 barrels; Clark, 200; Manifold, 120; Miller & Guffey, 100. The Alexander House, the oldest hotel building at Clarion, Pa., totally destroyed by fire; loss, $12,000; insurance, $7000.

April 13. The market opened with sales at 77¼c, slumped off to sales at 76⅝c, rallied to 77⅜c, weakened off to 77c, firmed up to 77¼c, broke to 76¼c, rallied to

76½c. During the last hour values changed rapidly, weakened to 75¼c, reacted and closed firm at 75⅞c bid. Smith farm well, Washington, 423 barrels; Clark, 195; Manifold, 115; Guffey & Miller, 100. Raccoon Oil Company's well, on McCoy farm, Shoustown, made 125 barrels in twenty-four hours ending at 7 p. m. Oscar F. Price elected first Mayor of the city of Jamestown. Meeting of citizens of Bradford who decide to shut off their gas supply on May 1st, unless the Bradford Gas Company reduces the present rates.

April 14. Market opened firm at 76¼c, fell off to 75¾c, advanced to 77⅜c and closed at 76¾c. Refined advanced ⅛c. Fifty producing wells at Kane gauge 3100 barrels. Hulings' No. 3, at Red Valley, down and dry, and marks a limit to the field on the west. Two wells of Miller Bros. & Crippens, shot at Grand Valley and reported at 100 and 132 barrels for the first twenty-four hours. A seventy-five hour walking match begins at the Bradford Parlor Skating Rink. Consolidated Stock and Petroleum Exchange, New York, decides to purchase a plot of land and erect a new building.

April 15. Market opened strong at 76⅞c and advanced to 77c, the highest point of the day; then weakened to 76¼c, firmed up to 76½c, receded to 75⅜c and closed at 75¾c. Wallace farm well, at Shoustown, reported good for 100 to 500 barrels; struck sand yesterday and this morning made a small flow. Conroy & Johnson well, on Davis farm, at Washington, shot with 100 quarts of glycerine without any effect. Smith No. 2, again drilling, but heavy pressure of gas makes the work slow. Shirl's well strikes the Gordon sand and makes 23 barrels the first hour, 20 barrels the second and 15 barrels the third. Col. Thomas Donnelly, president of the Fourth National Bank, of Pittsburgh, and an old oil operator, died at his home at McCandless Station, aged 84 years.

April 16. Market opened weak at 75⅝c, dropped off to 75⅛c, reacted to 75¾c and closed at 75⅜c. First twenty-four hours' gauge of Shirl's well, Washington, 327 barrels; making 10 barrels an hour this morning and drilling deeper. Thayer No. 1, 190 barrels; Gordon No. 1, 103. Gantz making 28 to 30 barrels a day. Gordon No. 4, eighteen feet in the Gantz sand with some gas, but no oil. Gas pressure increasing at the Smith No. 2. Joshua Wentling, a Red Valley oil operator, residing at Richie Run, one mile from Emlenton, commits suicide by shooting himself through the head; he was 45 years old and leaves a family well provided for.

April 17. The market opened firm at 75⅝c, advanced with good buying to 76⅝c, weakened to 76⅜c, rallied to 76¾c, fell to 76⅜ and firmed up to 77¼c. At 11 a. m. 77c was the best bid. It fluctuated between this figure and 77⅝c up to 1 p. m. It then fell off to 76¾c, vibrating between this point and 77⅜c, till near the close the changes were very rapid, advancing to 77½c and closing at 77¼c bid. McCoy farm well, at Shoustown, doing 45 barrels. Wallace farm well pronounced good for 30 barrels. Eighteen producing wells, at Washington, gauge 1469 barrels.

April 18. Sunday.

April 19. Market opened firm at 77½c, and advanced to 77⅞c, when Marlin bid 78c for 50,000. At 11:30 a. m. it weakened to 76⅛c. At 12 m. 76¼c was bid, fluctuating between this figure and 76¾c up to 2:30 p. m. Rallying from 76⅛c to 76⅜c, it fell to 75¾c, firmed up and closed at 76⅛c bid. Willets No. 2, on Munce farm, Washington, begins spraying oil at 75 feet from the top of the Gantz sand. The Weirich farm (Coast) well is doing 30 barrels and the McGovern (Union) 35 barrels a day. Gordon No. 4 drilling in "fifty" foot with no oil. Galey Bros'. well, on Leech farm, Shoustown, through sand and dry. Wallace farm well reported light. Columbia Gas Company finishes its eight-inch line to Meadville. Bradford City Council, after three weeks' investigation of the case of W. F. Kelly, Councilman from the Second ward, charged with offering to sell his servicess to the Gas company, returned a verdict charging Kelly with misbehavior. Spell of dry weather makes forest fires numerous. Butler county Court refuses to grant any licenses, and Butler county is left for a year without a single licensed house.

April 20. Market weak at opening when some sales were made at 75½c, lowest point of day. It afterwards firmed up to 76¾c and closed at 76⅝c. Carrying rates —Bradford, 30c; New York and Oil City, 40c; Pittsburgh, 50c. Coast & Sons, on Hays farm, Washington, 15 feet in Gordon rock and shows no oil; will make a small well from the Gantz sand. Munhall & Smithman well, on the R. D. Wylie farm, begins spraying oil. Gordon No. 4, 33 feet in "fifty-foot" without oil. Great trouble experienced in various parts of the region from forest fires. Piper & Bradley well, at Red Valley, in and dry. Bear Creek refinery, at Coleman Station, on the Allegheny Valley Railroad, north of Pittsburgh, destroyed by fire; loss, $50,000. Refinery had a capacity of 700 barrels a day and employed sixty men.

April 21. Market quiet; opened at 76⅝c to 76¾c, highest price of day, and closed at 76⅛c. Union No. 1, on Taylor farm, Washington, in the sand and showing for good well. Coast & Son, on Hays, nearly through Gordon sand and practically a failure. Fifty-seven wells, at Kane, gauge 3800 barrels. Wallace farm well, at Shoustown, makes 95 barrels in two days. Seven wells in the Shoustown or Shannopin field, with a daily yield of nearly 200 barrels; McCoy, 65; Hood, 40; Morrow, 30; Wallace, 30; McKean, 10; Dilworth, 12; McNamee, 1. Reported discovery of rich gold-bearing quartz, near Corry. Citizens' Protective Association hold another meeting on the gas question and decide upon a conference with C. E. Hequembourg and D. O'Day.

April 22. Market inactive; opened at 75⅞c and closed at 76¼c. Carrying rates 20c in Bradford. Union No. 1, Taylor farm, Washington, does 10 barrels an hour the first twelve hours. Willets No. 2, Munce farm, made 100 barrels first thirty hours. Munhall & Smithman spraying 50 to 100 barrels a day and is a strong gasser. Thayer No. 2, on the Clark, struck sand last night and averaged 15 barrels an hour for twelve hours. Shirl's well is doing 170 barrels. Gordon No. 1 makes 128 barrels in twenty-four hours. No. 2 starts pumping at an 80 barrel rate, but stops after twenty-four hours' work. Westmoreland and Cambria Company strike an immense gasser at Grapeville, in Westmoreland county; capacity estimated at 7,000,000 to 10,000,000 feet per day. Wallace farm well, Shoustown, made 75 barrels last twenty-four hours. Passenger car on the B., B. & K. R. R. topples over on its side, near Tarport. No one injured.

April 23. Good Friday. No market. Thayer No. 2, on the Clark farm, Washington, runs one bit and makes 52 barrels first hour and 70 the second; at 5 p. m. was making 65 barrels an hour; drill was run twenty minutes. Willets No. 2, on the Munce, estimated at 3 or 4 barrels an hour. Munhall & Smithman, on Wylie, 3 to 4 barrels, and Union, on Taylor, 9 barrels an hour. Vandergrift No. 2, on the Barre, has 1000 feet of oil in

the hole. Harper well, at Shoustown, showing for 20 barrels. Forest fires still very numerous.

April 24. Field news very bearish. Market opened panicky. The first sales were made at 75c, over one cent lower than the closing Thursday. It fell off quickly to 74⅜c, rallied to 74¾c, slumped off to 73⅝c, firmed up to 73⅞c, weakened to 73⅛c, braced up to 73¾c, falling to 73⅜c at 10:45 a. m. and fluctuated between this point and 74c up to 1:30. It again showed signs of weakening, being pounded down to 73c, firming up to 73⅝c, remaining at this price at 2 p. m., and again was hammered down to 72⅜c, rallying to 72⅞c, and sold down to 71¾c, braced up and closed at 72¼c bid. Carrying rates—New York, flat; Bradford, 25c to 30c; Oil City and Pittsburgh, 50c. Kane Oil Company No. 1, on lot 385, Kane, in the sand with good showing, flowing every forty minutes; production estimated at 150 to 300 barrels a day. Washington, M. & S, well, on R. D. Wylie, increased to 35 barrels an hour by deeper drilling. Twenty-three producing wells gauge 2743 barrels. Terrible casuality at Alton, McKean county; thirty Italian laborers occupied a construction shanty of the Erie Railroad which at 1 o'clock this morning suddenly went to pieces and caught fire; six Italians were burned to death and several others severely injured.

April 25. Sunday. The Black oil well at McKeesport, with a 250-barrel tank of oil burned. Kane Oil Company's No. 12, on lot 426, Kane, came in last night and reported good for 400 to 500 barrels. Eachel well, Shonstown, in sand and makes a ten minute flow.

April 26. Market opened at 71¾c, sold off to 71⅜c and vibrated between that point and 72c for two hours. About 1 p. m. it broke from 72⅛c to 71c, firmed up to 72c and remained steady for some time. During the last half hour it rallied to 72⅝c and finally closed at 72½c bid. Washington, Thayer No. 2, (Clark), drilled a couple of hours and from 10 a. m. to 7 p. m. produced 729 barrels, an average of 81 barrels an hour. Union, on Taylor, is rated at 500 barrels. Willets No. 2, Munce, twenty feet deeper than Smith farm well and showing no oil. Pew & Emerson, on Gabby farm, pumping 10 to 12 barrels a day. M. & S., Wylie farm, reported at 35 barrels an hour. Miller & Guffey well down to 100 and the Shirls to 140 barrels a day. Coast well, on Hays, makes a small flow. No. 1, on 385, Kane, said to gauge 125 barrels. Shoustown—Eachel well makes about 125 barrels first twenty-four hours. Wallace well produced 225 barrels in seventy-two hours. Harper shows for 30 barrels a day.

April 27. Market opened at 72⅝c, firmed up to 73¼c, broke rapidly to 72¼c and reacted to 72½c. The next raid carried it down to 71⅞c, from which it gradually crept up to 72½c. During the last hour it sold down to 72c, boomed to 73⅜c, weakened to 72¾c, firmed up to 73¼c and closed at 72⅞c bid. Carrying rates to-day were flat. In New York the rates were 25c, in Oil City 40c, and in Pittsburgh 50c. Marlin and Huntley selling and Haskell buying. Willets No. 2, on Munce farm, Washington, pronounced a duster in Gantz and "fifty-foot" sands. Pew & Emerson, on Wylie, through upper sands and dry; will drill for Gordon rock. Union No. 1, on Taylor, doing 500 barrels. Thayer No. 2, Clark, gauges 80 barrels an hour. Munhall & Smithman, on Wylie, reported at 30 barrels an hour by the owners. Production of Kane field 4100 barrels from sixty-four wells. Manufacturers' Gas Company begins work of digging ditch for its line at Oil City.

April 28. Market opened with firm feeling at 73½c, advanced to 73¾c, broke to 72⅞c and closed at 73c bid. Thayer No. 2, on Clark farm, Washington, drilled this afternoon and made 90 barrels the first hour, and at 7 p. m. was doing 77 barrels an hour. Gauge of Union well, on Taylor, given out at 482 barrels in twenty-four hours. Eachel well, Shoustown, completed Sunday, is doing 85 barrels a day. John McKinley, of Haliday run, near Oil City, kicked on the head by a horse and his skull fractured; feared he cannot recover. James Keenan attempts to force his way into a house at Smethport, and is struck over the head by Henry Hailaman with a monkey wrench; Keenan's skull is fractured and he is supposed to be fatally injured.

April 29. Market quiet, values ranging from 72⅛c to 73⅛c, closed at 72¼c. Carrying rates flat to 40c. Gordon No. 4, Washington, six bits in the sand and made 35 barrels last twenty-four hours Thayer No. 2 Clark, averaged 75 barrels an hour. Smith farm well down to 287 barrels in twenty-four hours. Production 4134 barrels from twenty-two wells. Union No. 1, on Taylor, gauges 405 barrels in 24 hours. Clinton & Swain well, on lot 345, Kane, makes a ten minute flow. Philadelphia Company's well, on Gilmore farm, Shoustown, down and dry. Bradford Gas Light and Heat Company reduces its rates about 20 per cent., and Citizens' Light and Heat Company form an organization.

April 30. Market opened at 72¼c and advanced to 73¾c, fell off to 73c and closed at 73½c bid. Carrying rates—Bradford, 40c; New York, 50c; Oil City, 45c; Pittsburgh, 40c. Gordon No. 4, Washington, makes 162 barrels in twenty-four hours. Thayer No. 2 holds to 80 barrels an hour. Munhall & Smithman, Wylie farm, estimated at 45 barrels an hour. Union Oil Company's No. 1, on Taylor, drilled all day; output for twenty-four hours 534 barrels. Vandergrift, Barre No. 2, reported at 142 barrels last twenty-four hours. Bradford Gas Light and Heat Company agrees to meet the Citizens' committee in conference for the purpose of arranging fair prices for gas, and the shut-down on the gas company is postponed for fifteen days.

Mr. S. A. Ford, of the Edgar Thomson Steel Works, makes some interesting comparisons as to the value of natural gas, coal and coke for heating purposes. He finds that when a ton of coke is worth $2.50, 1000 cubic feet of gas is worth 7 8-10 cents for its heating power. When coal is worth $2 50 per ton, natural gas is worth 6 8-10 cents per 1000 cubic feet. A ton of coal (2000 pounds) is equal to 36,764 cubic feet of natural gas.

The Pennsylvania Natural Gas Company, recently organized, has purchased the plant and franchises of the United Gas Fuel Company. The plant consists of 6000 acres of land in the Canonsburg field and a 12-inch wrought-iron pipe line to Pittsburgh. The United Company is under contract to finish the line by May 10th, and the formal transfer will be made on June 1st.

The Chicago Edwards Oil Burner and Manufacturing Company has purchased ten acres of land adjoining the Chicago & Atlantic Railroad, and will at once erect an oil refinery at Lima, Ohio, to handle all the oil produced in that neighborhood.

The Columbia Gas-Light and Fuel Company, of Franklin, Pa., has increased its capital stock from $500,000 to $1,000,000. This increase was necessitated by the increased operations of the company in the northern part of the State.

THE GEOLOGY OF THE PITTSBURGH COAL REGION.

A PAPER READ BEFORE THE AMERICAN INSTITUTE OF MINING ENGINEERS, BY J. P. LESLEY, STATE GEOLOGIST OF PENNSYLVANIA.

[CONTINUED FROM PAGE 1284.]

I WILL now give a short sketch of the geological formations of the Pittsburgh region, beginning at the top of the coal formations, and taking them in order downwards to the oil measures.

The highest pile of coal measures has been preserved in Greene county, near the State line, where the upland summits have an elevation of 2000 feet above tide, and the bottom of the great conglomerate has settled down to the depth of more than 500 feet below tide. In this part of the region, therefore, we have the most complete expression of the original thickness of the formation. But the general statement already made with regard to the former *lateral expanse* of the coal beds beyond their present geographical outcrops must now be made with regard to the former *vertical height* of the whole formation. For, as the formation has been eroded on its basset-edges, so it has been eroded at its top. Beds once existed which no longer can be found; but we do not know their number nor thickness; so that we do not know at what height in the air above Greene county lay the last coal measure. Were we to judge the case merely from the enormous amount of erosion which has taken place in Middle Pennsylvania (to the extent of 25,000 feet at Birmingham in Blair county, and at least 30,000 feet at Harrisburg) we might be led to suppose that the pile of coal measures formerly rose thousands of feet above the highest hills of Greene county. But if that were in any sense a fact, we might have to call the lost strata by some other name than that of coal measures; for in Europe a great formation overlies the coal measures proper, called the Permian, about which a great discussion has gone on, as to whether it should be included in the coal formation. The discussion is based upon the character of the fossil forms, and is, therefore, confined to geologists desirous to systematize the nomenclature of our science. It is a discussion of not the least importance to those who who busy themselves only with the order, character and mineral value of the coal formation. Its difficulties spring chiefly from essential differences between botany and zoology; but it is now generally granted that if any kind of fossils can settle the age of a formation, animal forms are better than vegetable forms for that purpose. Plants strongly resembling those fossilized in the Permian strata of Europe have been collected from the upper rocks of Greene county, and the neighboring district of West Virginia, by Professors Fontaine and White, who figured and described them in one of the volumes of our reports (PP, 1880). But on the other hand, animal remains from the upper coal measures of our State have not been numerously collected and described; but what is known of them would show that these rocks are a part of the coal formation.

By whatever name we may choose to designate the highest known beds of the Pittsburgh region, whether Upper Carboniferous or Lower Permian, or, as some would comprise the case, Permo-carboniferous, the matter of interest to us is the great fact that we have been robbed of a greater or less thickness of overlying strata, by erosion, since the rise of the continent out of the sea; and that we shall never know what were the last and highest deposits made in the sea immediately before that great event took place. If the climate of our part of the world had been absolutely dry, like the great plains of the far West, or the desert of Sahara, the whole pile to the top would have been preserved for our observation; the history of the Palæozic age would have been complete to the end of the last sentence of its first chapter; and, in order to turn the leaf to the first sentence of its second chapter, we should have had merely to transfer our attention to the New Red region of Eastern Pennsylvania, and begin the story of the Mesozoic age with the conglomerate beds, which cross the Schuylkill at Norristown and the Delaware at Trenton. As it is, at least one page of the Palæozoic chapter has been torn and lost, never to be recovered. There is no break in nature of such a kind as to allow an interval of deposits. Erosion goes on continuously, even during the operation of the greatest and most radical disturbance of the relations of land and sea. Whether our part of the continent rose by a single impulse, or by a succession of paroxysmal uplifts, like those which are still carrying up the Pacific sea coast to higher and higher elevations—whether the estuary of the Mesozoic New Red was depressed at the same time with the rise of the interior country, or whether that estuary was subsequently formed, by the erosion of the Palæozoic limestones—whether the Mesozoic estuary had its full dimensions, or being first merely an incipient creek lying close along the shore of the Azoic seaboard belt, afterwards grew in width by the gradual settling down of its bed northwestward along the line of a profound fault—it remains all the same true, that as soon as the last bed of the Permo-carboniferous formation was lifted above the waters, there immediately succeeded deposits elsewhere, in some part of the Mesozoic region (although it may be impossible to fix the localities) put or left under water on the conclusion of the Palæozic age. The people of the Pittsburgh region, however, may be interested to know that the termination of the coal age was no calamity for them, in the sense of diminishing in any degree the wealth of their region; for long before the end of the coal age, coal beds of any importance had ceased to come into existence.

The large sub-divisions of the coal formation were called by the geologists of the First Survey by the following names, which so clearly describe their characters, that they will probably hold good to the end of time:

1. The Upper Barren Measures, which have been divided by the Second Survey into an upper Greene county group, and a lower Washington county group, the bottom of the whole being the massive Waynesburg sandstone.

2. The Upper Productive or Monongahela river coal series, containing the Waynesburg, Uniontown, Sewickley and Redstone coal beds, and the Pittsburgh coal bed at its base.

3. The Lower Barren Measures, from the Pittsburgh coal bed down to the base of the Mahoning sandstone, containing no workable coal bed in the Pittsburgh region.

4. The Lower Productive or Allegheny river series, sub-divided by the First Survey into three groups, accepted by the Second Survey, viz.: The Freeport group at the top, with three coal beds; the Kittanning group in the middle, with three coal beds; and the Clarion group at the bottom, with three coal beds. But of these nine coal beds, not more than two, or at most, three, are anywhere found workable directly over one another, so

great is their variability in size and quality from mile to mile in any direction.

5. The Pottsville Conglomerate series (No. XII.) subdivided into three sandstone formations, upper, middle and lower, separated by shales containing small beds of coal, thin limestones and poor iron stones, and resting on the Sharon bed, celebrated for its furnace or block coal; a bed which widely spreads itself through Ohio, but is worthless in Pennsylvania, except in Mercer county.

The First Geological Survey recognized this as the bottom of the coal formation; and it practically remains so to this day; there being no workable bed of coal in Pennsylvania from the Sharon coal down through 25,000 feet.

The Second Geological Survey, however, has seen good reason for applying the term coal measures to several thousand feet of rocks underlying the Pottsville conglomerate in Middle Pennsylvania; for a group of coal beds crop out at least 600 feet beneath the conglomerate along the face of the Allegheny mountain; and one or two of these beds are now being tested for mining purposes, in a very thorough manner, in a ravine on Tipton run, near Altoona. Geologists regard the trial with great interest, as the result will either prove or disprove the possibility of these generally worthless coal beds being of real commercial value in isolated spots. Such a spot was once mined on Tom's run, a branch of the New river in Virginia. Another such spot has been tested at Duncannon, in Perry county, where one of these beds seemed promising but proved worthless. Another such spot has been tried, with the same want of success, at Mt. Patrick, higher up the Susquehanna. Where the Sideling Hill tunnel of the East Broad Top railroad cuts this group of beds, they number nineteen in all, and all of them are worthless. But when we go far south into Tennessee and Alabama, we find at this low geological horizon a considerable number of valuable coal beds, constituting in fact the real productive coal measures of the Gulf States. Our nomenclature must, therefore, be modified; and the coal formation, as a whole, must be extended downward to include the Mauch Chunk red shale formation No. XI, and the Pocono sandstone formation No. X.

It may be asked whether these worthless No. X coal beds spread beneath the Pittsburgh region; and if so, at what depth. The answer is, that they are represented by one or both of two black shale intervals in the Pittsburgh Boyd's hill gas well record (994 feet to 1076 feet, and 1405 feet to 1558 feet) *i. e.* between 841 feet and 1435 feet beneath low water level in the river. This represents a depth of between 1200 feet and 1800 feet beneath the Pittsburgh coal bed. In the centre of the State the No. X coals occupy the interval between 3000 feet and 3313 feet beneath the Pittsburgh coal bed.

It is evident that the lower members of the carboniferous system thin to less than one-half, in a direction westward, in the distance of 100 miles between Huntingdon county and Pittsburgh. We may, therefore, expect to find other great formations doing the same.

On the Susquehanna river, above Harrisburg, the eleven palæozoic formations from the top of the Pottsville conglomerate, No. XII, to the top of the Potsdam sandstone No. I measure at least 26,000 feet.* These same formations measure along the Ohio river above Cincinnati less than 3500 feet.† Pittsburgh is midway between these eastern and western outcrops. If the rate of westward thinning were regular, we could say with some confidence that a well bored at Pittsburgh would strike the Potsdam sandstone No. I at a depth of about 15,000 feet. But we know that the thinning goes on very rapidly between the Allegheny mountain and Pittsburgh in the Lower Carboniferous and Devonian strata; therefore it is quite possible that the Potsdam may lie not much deeper than 10,000 feet beneath Pittsburgh.

At all events, the palæozoic system as a whole is not half as thick in the Pittsburgh region as it is along its southeastern outcrop in Eastern Pennsylvania and Northern New Jersey.

Fifty years ago, by the combined labors of the four geological surveys of Pennsylvania, Ohio and New York, it became known that as a rule all the shale and sandstone formations are thicker and coarser in Middle Pennsylvania, and grow thinner and finer northward into New York, westward into Ohio, and southwestward into middle and West Virginia; that the great limestone formations at the bottom of the series increase in thickness for a certain distance into Western Pennsylvania and then diminish; and that the thin limestone beds in the upper parts of the series increase in thickness from the Susquehanna river all the way to the Mississippi, and southwestward into the Gulf States. But the preponderance of Palæozoic sandstones and shales over limestones is so great that the increase of the latter does not balance the decrease of the former; in consequence of which the whole Palæozoic system grows thinner and thinner from Harrisburg to Pittsburgh and Cincinnati, and from Harrisburg to Buffalo. In some of its details the thinning is astonishingly rapid. For instance, the Mauch Chunk red shale, No. XI, 3000 feet thick in Schuylkill county, is only 200 feet thick in the Allegheny mountain, and does not certainly exist at all at the New York and Ohio State lines. The great Upper Devonian Old Red sandstone formation No. IX, and the still greater Lower Devonian formation, No. VIII, (Chemung, etc.), which taken together measure 11,000 feet on the lower Juniata, crop out in Middle and Southern Ohio and along Lake Erie with a combined thickness of less than 1000 feet.

As Pittsburgh is 80 miles from the nearest Devonian and Silurian exposures along the Allegheny mountain, 110 miles from those on Lake Erie, and 160 miles from those around the capital of Ohio, we can know nothing precise about the respective depths of the Lower Devonian, Silurian, Siluro-Cambrian, Cambrian and Azoic formations beneath Pittsburgh, unless wells be bored 10,000 feet or more in depth.

Returning now to the coal measures of the Pittsburgh region proper, and considering their principal sub-divisions in a descending order, the following short statement of their characteristic features will suffice for our present purpose.

[TO BE CONTINUED.]

* Report F., 2. † Geol. Ohio, I.

THE Camden Consolidated Oil Company, of Parkersburg, W. Va., is erecting thirteen new oil stills and a large gasoline works at a cost of about $150,000. The works will use all the production of the Macksburg field, about 2000 barrel a day.

OLEAN, fired by Bradford's success in compelling the Bradford Gas-Light and Heating Company to reduce its rates on fuel gas, is making war on the charges of the Keystone Gas Company. A spirited meeting was held April 30, and a committee appointed to investigate the matter of gas rates in adjoining towns.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO APRIL 30, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	------	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5,180
December	98,582	17 342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,253	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,546	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87 193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107 514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67 883	151,913	4,900
September	19,590	64,648	63,453	147,691	4,923
October	13,824	56,151	55,211	125,186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25,469	62,262	2,224
March	11,558	23,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2,484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9 367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
Total Apr. 30 '86	3,541,038	2,544,228	2 054,898	8,140,164	5,572

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district up to April 30, 1886. Cherry Grove has produced 3,541,038 barrels, Cooper 2,544,228, and Balltown 2,054,898 barrels. The daily average runs from the three fields during April were 1,763 barrels, a decrease of 302 barrels from the March figures.

The daily average runs from the Cooper and Henry's Mills section for April were 583 barrels, for March 653 barrels, for February 571 barrels, for January 623 barrels, for December 749 barrels, for November 707 barrels, for October 777 barrels, and for September 918 barrels.

The Balltown field had a daily average of 832 barrels in April, 1059 barrels in March, 1056 barrels in February, 1063 barrels in January, 1182 barrels in December, 1030 barrels in November, and 925 barrels in October. Cherry Grove averaged 347 barrels in April, 353 barrels in March, 305 barrels in February, 306 barrels in January, 442 barrels in December, 303 barrels in November and 428 barrels during October.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to April 30, 1886, inclusive, has been 8,140,164 barrels, a total daily average of 5,572 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
September	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270,644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239		
April	280,005	9,333		
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
January, 1886	39,933	1,288	138,549	4,469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108,541	3,618

For the twelve months ending with April 30, the Cogley oil field has produced 1,178,505 barrels of oil, a daily average of 3367 barrels. The daily average for 320 days ending March 31, was 3344 barrels. Previous to May 15, 1885, Cogley oil was included with the general runs of the old Clarion field. The daily average for April is 229 barrels less than for March, while the March average was 123 barrels less than that of February. February declined 499 barrels a day from the January average, and January showed a decrease of 772 barrels a day when compared with December. The highest daily average for the Cogley field was attained last November, since which time there has been a drop of 1798 barrels a day in the runs. The Thorn Creek and Baldridge runs averaged 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January, 1420 barrels in December, 1469 barrels in November, 1898 barrels in October and 2021 barrels in September. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 600 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 30th of April had produced 170,507 barrels; a daily average for 212 days of 804 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, and 764 barrels a day in April.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅛	85½	79⅝	-----
June	68⅜	100¼	81	54½	117¼	68¾	82¼	-----
July	69⅞	101¼	76⅛	57⅝	108	63½	96¾	-----
August	67¼	103¾	78⅝	58⅝	108⅜	81 1-5	100⅜	-----
September	69¼	95½	92¼	71⅓	112½	78	100¾	-----
October	88⅛	96⅝	92¾	93⅝	111⅛	71	105½	-----
November	105⅜	91¼	82¼	114⅜	114 4-5	72½	104⅜	-----
December	113¼	92⅜	83¾	95¼	114⅛	74⅜	89⅝	-----

THE PETROLEUM AGE,
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THE PRODUCING REGION.

At the beginning of April there were 263 new rigs and 413 drilling wells in the entire country, a total of 679. Out of this number 353 wells were completed, which on the last day of the month were estimated to have had an output of 8782 barrels. The number of dry holes was 58, leaving 295 productive wells, with an average yield of about 30 barrels a piece.

During March the entire region completed 246 productive wells and 50 dry holes, and the average of the new wells March 31 was estimated at 21 barrels. These figures show an increase of 57 wells completed, of 3577 barrels new production, and of 8 dry holes. The average of the new wells is swelled by the large strikes at Washington and Kane. In April, 1885, 136 wells were completed, with a new production of 4656 barrels, and the dusters were 12 in number. At the close of April there were 247 new rigs, 140 old rigs and 356 drilling wells in the New York and Pennsylvania oil producing regions.

The outlook at the close of April is for additional territory on the north of the Kane region, enlarged area of the pool at Washington, and a new field of unknown dimensions at Shoustown. The two pools known as Red Valley and Tarkill, in Venango county, show unmistakable signs of weakness, and are already pretty thoroughly defined, while Grand Valley, in Warren county, promises to furnish new business for the drill throughout the coming summer.

ALLEGANY FIELD.

The old wells of the Allegany field have dropped to insignificant proportions, and the new wells show very small averages when compared with those brought to light by the drill two, three or four years ago. Several of the large companies are disposing of their extensive interests in this field on favorable terms to parties who are content to work for moderate returns of the capital invested. The April report of Allegany shows 34 completed wells, including 3 dry holes, and a new production of 193 barrels. The new wells average about 6 barrels apiece. On the last of the month there were 22 new rigs, 44 old rigs and 34 drilling wells in this section, a total of 100, and a decline of 11 new rigs and 5 drilling wells, with an increase of 6 old rigs as compared with the report of March 31. Fritts & McKelvey finished a gas well on lot 3, Clarksville, which from its location was considered beforehand certain to prove a good producer of oil. Some residents of Nile drilled a duster near the village, while Wm. Hill & Co. put down the same kind of a well on lot 25, Genesee. The Allegany pipe line runs averaged 6895 barrels a day in April, 6545 barrels a day in March, 6361 barrels in February and 6235 barrels in January.

THE BRADFORD FIELD.

Fifty-two wells were completed in the Bradford field, including four dry holes. The new production is estimated at 382 barrels, an average of about 8 barrels to the well. The March wells averaged 7½ barrels each. There is a slightly decreased activity in work under way, which is represented by a decrease of 10 new rigs and 1 drilling well. At the same time the old rigs increase 4. On the last day of April the footings of field operations show 30 new rigs, 37 old rigs and 48 drilling wells, a total of 115.

Three of the Bradford field dusters are found in the immediate vicinity of the Conroy & Johnson well, south of Allegany village across the State line. This new section of prospective territory, north of the Four Mile district, which was fondly expected to supply the producing fraternity with more of the chocolate sand territory, similar to Allegany and Bradford, up to the present writing consists of a single producing well and four, possibly five dusters. The Conroy & Johnson No. 2, on the Freeland farm, 120 rods west of No. 1, the Stow & Co. 470 rods southwest, and the Johnson well, on the Kahm, 450 rods north, were all pronounced positive dusters in the month of April. Since the first of the month Hickey, Smith & Co., on the J. Riehler farm, and Stevens Bros.' well, on lot 9 in the same locality, have met a similar fate. D. J. Keyes likewise completed a dry hole on the Lamphear farm, southwest of Eldred. It was drilled to a depth of over 1600 feet, and shot with 100 quarts of nitro-glycerine without any results. The pipe line runs from the Bradford field averaged 28,640 barrels a day in April, 29,333 barrels in March, 27,499 in February 27,966 in January.

WARREN AND FOREST.

Kane and Grand Valley continue the two centres of greatest activity in the middle field. One hundred and forty wells were completed, 42 more than in March, and the new production is increased 1270 barrels. The dusters are 17 in number, 5 more than shown in the March report. Forty-seven of the new wells and 2865 barrels of the new production come from one section alone, the new development at Kane, in the southwestern portion of McKean county. On the last day of April the middle field revealed 99 new rigs, 39 old rigs and 149 drilling wells, a total of 287, and a decrease of 29 from the figures at the close of the month preceding.

KANE.—Forty-seven wells were completed in the Kane field during April, having an estimated new production on the last day of that month of 2865 barrels, and of this large number of new wells one was a gasser. There was no change in the aggregate of rigs and drilling wells. The count at the close of April showed 29 new rigs, 3 old ones and 62 wells drilling, a total of 94. The well of Clinton & Co. on the eastern part of lot 345 is 400 rods north of the producing wells on lots 384 and 385, and is the most important well that has been finished in the field since our last report was published. The well according to the best available information is a small producer after being torpedoed. It had one bit of good sand and in torpedoing the well a shell ten feet long was used. It is generally rated as a 5 barrel producer. Andrews & Co.'s No. 2 on the southwestern corner of lot 384 is a better well than No. 1, which is located 40 rods to the eastward. The Kane Oil Company's No. 1 on lot 385 is rated at 75 barrels. The Roy & Archer No. 1 along the northern boundary line of warrant 3767 started at 75 barrels, and shows that the western side of the streak has not found its governing points. Mr. Porter reports the Kane Oil Company's No. 1 well on its 25-acre purchase in the northwestern corner of lot 420 good for 160 barrels the first 24 hours. R. B. Stone & Co.'s well on

the eastern part of lot 379, and T. N. Barnsdall's venture on the southeastern part of lot 346 are due this month, and are the most important wells going down in the Kane wilds. Both are gassers from the sands above the producing rock. The Hemlock Oil Company's test wells on warrant 3132 are still mystified, and a slight display of crude has been made at the southerly well on the warrant. The chances are against either of them finding oil in paying quantities. The average daily pipe line runs from the Kane field during April were 3017 barrels, while the March average was 1252.

Kinzua Village.—The completion of the Phillips well on the Richardson lands, and the verdict dry in all known sands, leaves Kinzua Village destitute of interest to the oil trade. The Graveyard Oil Company's well in the English family burying ground on the "flats" has been finished, and though within a short distance of wells that had declined to 4 or 5 barrels a day, started off at a good pace, and at last accounts was doing about 40 barrels a day. On the west side of the river Duke & Harris are credited with a duster, while Morse & Collins are drilling near the sand at a second well.

Clarendon and Tiona.—The drilling of Benedict & Rockwell (D. H. McKelvey & Co.), on warrant 2958, has extended the Stoneham field to the north as far as the Allegheny river, and connected it with the portion of the Wardwell district that was first discovered in the spring of 1884. The Logan & McWilliams well, on lot 49, east of Stoneham, and the Barnum venture to the west, on lot 488, are both pronounced failures. Waid & Law have completed an experiment on lot 461 that attracted considerable attention, from the fact that it showed a little oil, and the owners expended some time and money in trying to make a producer of it. It is classed among the dusty failures of the past month. There is a disposition growing on the part of the heavy producers of the middle field to check active operations, which will doubtless show some results in our May report. About Tiona there is still a fair amount of work under way. Lot 284 is showing up some excellent wells and the operators in that part of the field are reaching out for an extension still farther southwest. The old hole put down by Michael Murphy, on lot 321, during the Cherry Grove excitement in 1882, has been resurrected and made into a small producer of 3 or 4 barrels calibre.

Cooper and Balltown.—The Miller & Odell well, near the centre of lot 756, in the southeast corner of Cherry Grove township, is a failure. N. F. Clark secured a similar result near the border of his extensive producing property on 3195, while May, Kelley & Grandin are also credited with a duster on 5215. This last well confines the southwest extension of the Balltown field within exceedingly narrow limits. James Welsh's No. 4, on 5214, is reported to have started at 100 barrels. The Anchor Oil Company is drilling between Welsh and the M. K. & G. lease. During April the runs from the Cooper and Henry's Mills district declined at the rate of 70 barrels a day, while the falling off of the pipe line runs from the Balltown field averaged 227 barrels a day.

Grand Valley.—Eighteen wells were completed at Grand Valley in April, including three dry holes. This long negleted section has been boomed into importance by several very fair strikes which were just large enough to attract the attention of producers who are content with moderate returns and long time investments. Twenty-two rigs and 17 drilling wells were under way on the last day of April, and the field appears capable of affording a large area of small territory, which will be thoroughly perforated the coming summer. Shallow drilling and decreased cost of operating go a great way toward offsetting the terrors inspired by low prices in the crude market.

THE LOWER COUNTRY.

The lower country, with its Washington and Shoustown divisions, is now become the most important section of the producing region. It supplied 45 per cent. of the new production in March, and over 50 per cent. in April. In the latter month 83 producing wells and 34 dry holes were completed in its various sub-divisions, and on April 30 the count showed 99 new rigs and 149 drilling wells under way as compared with 93 rigs and 188 drilling wells on the 31st of March.

Venango.—With this county is included the operations about Titusville, in Crawford county. There is about the same amount of activity summed up in the April totals as was shown in the March report, but the new production for April is behind that of March by 396 barrels. This is due to the decreasing importance of Tarkill and Red Valley, the two productive pools latest discovered in Venango county. Red Valley is completely surrounded by dry holes on all sides, and the drilling wells now under way within its borders are comparatively few in number. C. C. Bowen has finished a light well east of the present development, and hopes to develop another streak of territory on this side of the field. The Dale & Fisher well, on the widow Bell farm, on the northeast, was a failure. Wilson & Smith are drilling an important test on the Glenn farm, two thousand feet northeast of the present development, while the Forest Oil Company is drilling at No. 5, on the Furnace tract, about 400 feet southwest of No. 1. The pipe line runs from this district averaged 1231 barrels a day in April, 1206 in March, 1017 in February and 783 barrels in January. The total runs have been 170,506 barrels for 212 days, ending with the 30th of April, a daily average of 804 barrels.

April developments in the Tarkill section were not at all of a sensational character. Three wells directly north of the 400-barrel gusher of the Benton Oil Company, proved very ordinary affairs, and are rated at 30 barrels each. Fisher & Duncan secured a fair well on the Hill farm, west of Taylor, Torrey & Murphy's property; it started at 100 barrels. The drill is being actively urged in that locality, which was formerly considered very light territory. The Tarkill runs averaged 764 barrels a day in April and 427 barrels in March. The Venango sub-division of the lower country completed 51 wells in April, with an aggregate production for the last day of the month of 620 barrels. The dry holes numbered 15. On the last day of the month the summary shows 33 new rigs, 13 old rigs and 35 drilling wells, a total of 81, as compared with 85 rigs and drilling wells at the close of March.

Clarion.—All of the test wells drilled in the various parts of Clarion county during April came in dry. The Blyson Run Oil Company's well, on the McCammont farm, failed to find any traces of the Clarion sand, though drilled several hundred feet below its level. A small amount of oil was found in a shallow sand and is probably the rock which afforded the oil which was shipped from this section during the war times. Leeper & Arnold's No. 2, on the Leeper tract, disclosed the existence of some oil in the Clarion sand, but was rated dry when a depth of 1500 feet had been reached. Snyder, Loots & Co.'s venture, on the Moore farm, near Snydersburg, along the P. & W. R. R., demonstrated that the ridge upon which it is located is barren of oil.

Close around the Cogley belt several dusters were discovered. John Deitrich & Co. located one of them on the Stumpner farm, and Shaffer & Co. secured a place for the other on the E. Miller farm, at the southwestern extremity of the field. The average daily pipe line runs from the Cogley district were 3618 barrels in April and 3847 in March, a decrease of 229 barrels. Producers have been shooting old wells quite extensively, and in this manner the production has been nearly sustained. Clarion completed 17 wells and 7 dusters in April: the new production is rated at 176 barrels. On the 30th of April there were 15 new rigs, 8 old rigs and 18 drilling wells in the Clarion field.

BUTLER AND ARMSTRONG.—The new work in the Ort district, east of Millerstown, was materially reduced by the work of the drill in April. A large number of fine wells were added to the producing list, having an average which came up to that established by groups of the best wells in the district. On the McKeever farm, Showalter Bros. & Hartman finished five wells and stopped the drill.

There has been considerable agitation in oil circles concerning the strike at Jefferson Centre, in Jefferson township, by Gahagan & Co. A report from a reliable source comes to us that the well made several flows over the derrick after the sand was struck, and that a complication in regard to certain leases in that section has caused the parties to keep back the true inwardness of the well. It is evident from demonstrations that the well will make at least a small producer. The Uniontown Oil Company's well, on the Critchlow farm, east of the well of Painter Bros., at Reibold Station, shows that the drilling has been done in the wrong direction to catch the streak. According to the latest reports the well on the Critchlow put twenty inches into a 250-barrel tank when being drilled into the sand. This record indicates that it has a capacity to produce 50 barrels of oil in a day. In April 34 wells were finished in the Butler and Armstrong district having a new production on the last day of the month of 955 barrels. At the close of the month there were 24 new rigs, 8 old ones and 29 wells drilling, a total of 61, a decrease of 15 from the aggregate of the previous month.

WASHINGTON.

The map of the Washington field, presented with this number of the AGE, shows the location of all wells in the district up to May 10th, except the remote wild-cats which find a position outside of its geographical range. It extends far enough west to take in the Conroy & Johnson failure on the Davis farm, and to the northeast Roth, Peffer and Dyer's venture on the McGahey farm. Wilson, Weaver & Brenneman's well, on the Andrews farm, east of all producing wells, and Hukill & Co.'s test, on the Wade farm at the south, are situated within the border lines of the map.

The numerous and massive sands of the Washington field demonstrated their capabilities of affording large wells when the Thayer Oil Company's No. 2, on the Clark heirs farm, was drilled into the Gordon sand April 21st. The reports which went out from that well gave the bulls a shock equal in intensity to that which they received at the time of the Pew & Emerson strike on the Manifold farm. Hourly gauges indicate that the Thayer Oil Company's No. 2 flowed 90 barrels per hour when at her best. The derrick was struck by lightning on the night of May 5th, and the rig and tankage burned. For the 24 hours ending May 5th the well produced 1488 barrels, and the gauge on the 12th gave a yield of 1128 barrels. The P. L. & H. Company's No. 4 on the Gordon farm, a short distance southeast of the Thayer Oil Company's No. 2, was a much smaller well, but a profitable producer. On the first of the month its production was 350 barrels. Over at the eastern end of the field the situation is more interesting than at the western. Pew & Emerson's well on the Wylie farm has been drilled below the fifty foot without finding any oil. At last accounts it was drilling in hard sand without any showing of oil. It has a slender chance of striking oil in the Gordon rock. The Willets No. 2 on the Munce is a failure for oil producing purposes as far down as the fifty foot. Vandergrift's No. 1 and 2 on the Barre, the Willets No. 3 on the Munce and the Union Oil Company's No. 1 on the Taylor are wells ranging in size between 500 and 1000 barrels when at their best. The Barre No. 1 and Barre No. 2 have a small amount of gas, while the Smith No. 1 and other wells north are quite heavy gassers. Munhall & Co.'s well on the Wylie farm has had its true inwardness concealed from the trade and is generally conceded to have been an over estimated well. The well that John McKeown is drilling on an adjoining property to the Munhall will give the calibre of the territory at this northeastern point. For the 24 hours ending on the 15th the Barre No. 1 produced 205 barrels and No. 2, 725. On the same morning a bit was run at the Barre No. 1, and its production increased to 40 barrels per hour. Vandergrift & Co. struck quite a heavy gasser in the upper sands at the Taylorstown well, about six miles west of Washingtown. The Washington field is a big bear experiment, and must remain so until some of the outside wild-cat wells have passed below the level of the bottom of the Gordon sand.

THE SHOUSTOWN FIELD.

The Shoustown oil field is as much of an experiment as it was after the Wallace well was struck. The southern edge of the belt was then pretty well defined as far to the southwest as this point, but the limits on the west and north were then and still remain undetermined. Galey Bros. are drilling a well on an island in Raccoon creek, two miles southwest of the Wallace. Curtis & Co. are sinking an important test well on the McCallister farm, which is considered too far north to catch the oleaginous streak. The Raccoon Oil Company was much surprised at the result of its two ventures on the eastern end of the McCoy heirs' property. One was located on the Kriess, twenty-five rods from the north line of the farm, and the other on the Douds, seventy-five rods from the same line. They failed to disclose the existence of oil, and since their completion the warlike lessees of the Jordan have been less eager for active hostilities. The Raccoon Oil Company's well, on the Charles Eachel farm, met the expectations of the owners by showing her ability to produce 100 barrels per day. The Wallace farm well produced 75 barrels per day as a natural well, and after being torpedoed has a record of 150 barrels per day. It is a fine producer and has already caused a number of wells to be started in its immediate vicinity and a long ways in advance of developments.

THE People's Gas Company, of Warren, Pa., has ordered its first lot of pipe and commenced drilling its first gas well.

THE second oil well at Puente, Los Angeles county, California, is a success at a depth of 300 feet. A fine body of oil is produced, of rather heavy quality, like that from the other well, but excellent for fuel purposes. —*Grocer and Country Merchant.*

Petroleum in Egypt.

The fact that petroleum exists in Egypt is by no means a new discovery, for it was used by the Egyptians more than 1,000 years ago, the oil being collected from the fissures of Jebel Zeit ("oil mountain"), and used by the natives as a specific for rheumatism and skin diseases from time immemorial. It is a well known fact that the soil of this mountain contained a goodly quantity of oil, but that it existed in large quantities was only decided lately by the Belgian engineer, Debay.

The Suez correspondent of the London *Times* gives the following in regard to the discovery:

"SUEZ, March 22, 1886.

Nubar Pasha, his son, Boghos Pasha, civil engineer, Colonel Scott Moncrieff and Major Western, both of the Public Works Department, Mr. Mitchell, geologist, and Mr. Hooker, chemist, have returned from the expedition to the petroleum wells discovered at the peninsula of Jemsah, on the west coast of the Red Sea, about 170 miles south of Suez, at the foot of the mountain known as Djebel Zeit, or Oil Mountain.

It has long been known that petroleum existed in that neighborhood, but previous explorations had produced no result. In September, 1884, a Belgian mining engineer, M. Debay, who was accidentally in Cairo, was sent to report on the possibilities of the practical working of the oil beds. He reported favorably, and considered the experiment was worth a preliminary expenditure. Accordingly he was entrusted with £3,000, and was charged to engage workmen for the purpose of ascertaining the value of the discovery. Nothing was heard of it for some time, but after considerable trouble M. Debay, with thirty Belgian workmen, was dispatched from Suez towards the end of November, 1885, the Government agreeing to defray all expenditure until the first of March.

In spite of much discouragement M. Debay appears to have worked with considerable energy in discharging material and establishing his small colony, including his wife, on a spot which was absolutely destitute of human habitation, vegetation or water. After carefully selecting a spot he commenced boring at a distance of thirty yards from the sea on the 15th of January. After penetrating successively through gypsum, containing veins and nests of sulphur, shale, green and blue clay, limestone and sandstone, the drill on February 28, the day before the expiration of the period limited, fell suddenly forty centimetres, and petroleum rose to a point two metres above the sea level.

On recept of the news, Nubar Pasha, with characteristic energy, arranged the present expedition, which I was permitted to accompany. The examination by the party of above-mentioned experts has resulted in the establishment of the following facts: That petroleum undoubtedly exists; that the geological formation of the country is favorable to the existence of larger quantities at lower depths; that the store of oil is generally distributed over a large area in the neighborhood; that under existing unfavorable conditions a single source yields about two tons daily; that the specific gravity is .88; and that the spot is easily accessible from the coast, where there is good anchorage."

The expedition, equipped at the expense of the Egyptian treasury, under the command of Debay, had nearly exhausted its limit of time, there being only one day left, and on this the oil was discovered. When the Egyptian Premier arrived on the spot he found many pools of petroleum. The evening of the same day was spent in consultation in a cave by the hillside, which was "strongly redolent of petroleum." It was decided that the work of exploration should be continued; that the drill, which had only been sunk thirty-five meters (thirty-nine yards), should be worked at least another fifteen meters (seventeen yards), as it was deemed probable that the oil then appearing was only ooze through the clay, and that larger supplies would be found beneath the rock. Since then the boring of only five meters resulted in an outflow in twenty-four hours of 500 tons of water and oil mixed, and of this M. Debay estimates the pure petroleum at not less than fifty tons, or over 21,000 gallons.

In view of these circumstances, the Egyptian government is anxious to enter into negotiations for the working of the industry, and as there is nothing it lacks so much as revenue there is a prospect of some considerable amount being obtained from this source. The idea of the government is wisely to avoid a monopoly, to divide the land into portions and to cede them for a sum in cash and a royalty on all production. One thing is certain to commend itself to investors, the short distance from ports of shipment. The distance from Jemsah to Suez is but 180 miles, and experience on this side has shown that it would be perfectly practicable to lay a pipe line, and at Suez every facility is available for refineries and shipping the product. Its nearness to India and the East is another attraction; besides, it would command many of the markets on the Mediterranean. The analysis of the oil at present is not perfect, but indicates that the quality is similar to the Baku product.

Special from Cairo, Egypt, to London Times, April 12th.

"The Egyptian government has issued the following notice:

"In consequence of the borings made at the instance of the government at Djemsah, on the coast of the Red Sea, 150 miles from Suez, oil has been struck, the yield being 150 cubic meters in twenty-four hours (about 900 barrels).

"The government is prepared to deliver at Suez samples in sufficient quantities to meet the requirements of all manufacturers who wish to test quality and value. Further information can be obtained from the Ministry of Public Works, Cairo."

The Philadelphia Company and Its Rates for Natural Gas.

The Philadelphia Company at its last meeting elected the following officers: President, George Westinghouse, Jr.; Vice-President and General Manager, Charles Paine; Treasurer, John Caldwell; Secretary, John R. McGinley; Auditor, Horace S. Clark; Directors, D. Hostetter, Robert Pitcairn, H. H. Westinghouse, A. M. Byers, with the officers.

The company holds leases of 51,832 acres of gas territory, at a yearly average rental of sixty-eight cents per acre. Its capital stock is $5,000,000, divided into 100,000 shares. The annual statement of April 1 shows an investment of $7,111,225.82 in unavailable assets, and at the meeting of stockholders on the 26th of May it is expected that the capital stock will be increased. The net debt of the company is $1,644,738.21. For the three months ending with April 1 the gross earnings of the company were $387,482.93, and its expenses $115,193.94, leaving the net earnings for three months $272,288.99. For the previous three months its net earnings were $180,770.86. The company has been paying regular dividends of one per cent. a month.

The company's plant consists of forty-five wells and 331 miles of pipe. Twelve main lines convey the fluid

by several independent routes from the wells to Braddock, Homestead, Sharpsburg, McKeesport, Verona, Allegheny City and to every part of the city of Pittsburgh and its suburbs.

The Philadelphia Company commenced active operations in October, 1884, when work was begun on a line from Tarentum to Hoboken. Lines were also laid from Murraysville to Hoboken, from Hoboken to Sharpsburg, Etna, and Willow Grove, on the Allegheny City side of the river, and in Pittsburgh along the Allegheny river to Tenth street on Duquesne way. By the beginning of June, 1885, gas was being delivered to consumers along all these routes.

On January 9, 1885, the company acquired the rights and property of the Allegheny Natural Gas Company, represented by the Messrs. Verner, and at the same time made a perpetual contract with Messrs. Carnegie Bros. & Co., Limited, for the supply of gas for their mills within the city of Pittsburgh, known as the Union Iron Mills, Wilson, Walker & Co., Keystone Bridge Company and Lucy Furnace. Later on the Acme Gas Company was purchased for $385,000 in cash, stock and notes with interest. The Acme purchase included valuable pipe lines and gas territory and several profitable contracts, among which was one with the Edgar Thompson Steel Works, running for a number of years at satisfactory rates.

Immediately after the purchase of the Acme Gas Company, negotiations were begun with a majority of the stockholders of the Carpenter Natural Gas Company, which led to an agreement dated July 24, 1885, to purchase from them their stock in the Carpenter Gas Company at the rate of $90 per $100 share, the capital stock of the company being $500,000.

The company also acquired from George Westinghouse, Jr., the exclusive right within Allegheny county to the valuable inventions, the use of which has contributed so much to the freedom from accident that this company has enjoyed in carrying on its extensive business.

The success of the Philadelphia Company was still farther enlarged by the acquisition of the lines controlled by Pew & Emerson and Dr. Hostetter. On August 15, 1885, a contract was entered into with Dr. David Hostetter for the purchase of the entire capital stock of the Penn Fuel Company, Fuel Gas Company, Pew, Emerson & Co., Limited, and the various auxiliary companies controlled by them, for the sum of $1,500,000, free of debt.

To meet the increasing demands made upon the company, the capital stock was increased December 17, 1884, to $1,300,000; on May 4, 1885, to $1,500,000; on June 27, 1885, to $2,000,000; on August 19, 1885, prior to the purchase of the Penn Fuel Company, Fuel Gas Company, and Pew, Emerson & Co., Limited, above referred to, to $5,000,000.

The Philadelphia Company supplied the following in March:

Boilers	967
Heating furnaces, large	587
" " small	223
Pudding "	505
Crucible "	21
Open-hearth furnaces (with running attachments)	13
Hammer	58
Nut, bolt and chain	60
Glass melting pots	6.3
Glory holes, lehrs, ovens, etc.	378
Oil stills	31
Brick-kilns	18
Drying-floors	23
Dwelling houses, over	4500

The charges made by the Philadelphia Company, which may be taken as the ruling prices in Pittsburgh, are as follows:

IRON AND STEEL.

Puddling, gross ton	$1
Heating (each heat), gross ton	40c. to 60c.
Boilers, per mouth	$50 to $100
Total cost gas per ton iron, single heated, gross ton	$1.80 to $2.10
Sheet iron or steel gross ton	2.25 to 2.60
Hoop iron or steel, " "	2.25 to 2.60
Open hearth melting, " "	.70
Crucible steel " " "	.50
Hammer furnaces, per day	1.00 to 1.60

GLASS.

Flint, each 10-pot furnace, per month	$160
large glory-hole, " "	30
small " " "	$15 to 22
lear, " " "	25
steam-boiler, " "	35 to 50

Average cost gas about $28 a pot per month.
Window glass—average $33 33 a pot per month, blowing furnaces, flattening ovens, sand furnaces and boilers included.
Green bottle glass same as window glass.
Boilers in general works range from $20 to $150 a month.

Oil stills, per month	$35 00 to $100.00
Brick kilns and drying floors, per M	1 00
Fire brick, per M	1.00 to 1.40

Domestic use.—This is based on number of square feet heated, the basis being $10 a year for 15 feet square The charge for heating stoves is $2.50 a month, for open grates, $2.

Crude Market for April.

Business at the oil exchanges continues light, and the crude market presents but few interesting features. In dulless and general apathy the April market is a repetition of that of March, with prices ranging on a lower plane. The news from Kane, Washington and Shoustown has been used with crushing effect by the bears, but the bulls found a steady rallying point whenever prices were crowded down to 71 cents. The Kane field at the present time remains practically undefined on the north, with Washington and Shoustown uncertain factors in the line of possible production. With these new districts hanging over the trade, the decline in the older fields is not sufficient to bring about any sudden upward movement of values. Statistically, production has been less than consumption, but the stocks accumulated in past years supply all deficiencies. But upon the first intimation of failure on the part of Washington's gusher wells the holders of oil certificates will make good use of the fact to strengthen the tone of the present sluggish and inactive market.

The month commenced with crude quotations at 72⅜c to 72¾c, and closed with the fractions at 73⅜c to 73½c. The highest price was reached on the 12th, when 78⅜c was bid; the lowest on the 26th, when prices broke to 70⅞c, upon the report that the Thayer well was making 90 barrels an hour. The lowest quotation for March was 71c and the highest 80½c.

The range of prices for April was 7½c as compared with 9½c, in March, 9⅞c in February, 10½c in January, 8⅜c in December, 23⅞c in November and 12½c in October. The average price on the floor of the Bradford Exchange was 74c in April against 77⅛c in March, 80c in February, 88¼c in January, 89⅝c in December, 104⅜c in November, and 105½c in October. The average price for April one year ago was 78⅞c.

THE CLEARANCES.

	April Barrels.	March. Barrels.
Bradford Oil Exchange	36,734,000	36,788,000
Oil City "	94,302,000	85,690,000
New York Consolidated Exchange	187,607,000	179,569,000
Pittsburgh Petroleum Exchange	66,216,000	63,440,000
Philadelphia Oil Exchange	16,123,000	15,164,000
Total	400,982,000	380,651,000

BLUE print maps of the various oil fields to be had at the AGE office, price one dollar each.

APRIL OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN APRIL, 1886.

Allegany Field.

Twp. Owner.	Barrels.
Scio, 1, Applebee Bros No 12	5
Alma, 3, Triangle Oil Co No 19	4
" 19, Duke & Norton No 66	12
" 23, Vance & Harton	4
" 37, (Randall) L & E F Willets No 2	4
" 78, Rathbun & Backer No 4	3
" 86, Brown & Thornton No 3	4
" 86, Shirley & Hochstetter No 10	5
" 140, Willets, Duke & Rauber No 10.	4
Wirt, 47, (Johnson) Jamestown Oil Co No 1	4
" 48, (Hicks) Chas Phillips No 4	7
" 48, " Love & Co No 3	7
" 48, (Church) Allegany Oil Co No 2	4
" 52, (Jacob Jordan) Barton, Ackerly & Smith No 7	7
" 52, (Burdick) Wilson Bros & Ackerly No 11	8
" 59, (Labar) Reynolds & Co No 2	10
" 59, Chandler & Howard No 2	5
" 59, (Carnahan) Dow & Barnsdall No 1	2
" 62, (Peterson) Barton, Hammond & O'Neill No 1	10
Bolivar, 23, John Fay	4
Genesee, 24, Emery Oil Co No 9	3
" 2, (Hill) Nigbthawk Oil Co	dry
Clarksville, 3, (Millis) Fritz & McKelvy No 1	dry
" 3, (Alvah Jordan) A B Cottrell No 1	4
" 5, (Hubbard) Steele & Werthman No 1	5
" 5, (Wetherby) Congden & Warner No 2	5
" 5, (Bradford) Barton, Ackerly & Co No 19	15
" 6, (Swartwout) Barton, Ackerly & Co No 10	12
" 14, (Lane) Barton, Ackerly & Co No 29	8
" 5, (Jordan) Penny & Co No 1	5
" 10, (Swartwout) Angell Oil Co No 17	10
" 14, (Lane) Lane Oil Co No 2	8
" 20, (McDougal) Love & Patterson No 1	5
Near Nile Village, Hard to Raise Oil Co.	dry

Wells completed 34
Production 193
Dry 3

Bradford Field.

East and West Branches.

O'Donnell, Wilbur Bros No 3	4
Watrous, A K Darrow No 1	2
Warrant 2258, Van Vleck & Mitcheil No 35	8
Bingham lot 154, Union Oil Co No 20	10
Craft, Roy & Archer No 18	10
Brown, James B Fox No 4	5
Wagner, C K Book No 3	5
Blair, Tom McDonough No 2	5
Cockroft, James E Cochran No 2	4
Hooker, P Hooker No 1	4
Quintuple, 107, J S Wilson No 3	5
" 140, Booth Bros No 1	6

Kendall Creek.

Turner, Perry Timblin No 7	6
Lafferty, Van Vleck & Gifford No 50	10
" " " No 53	10
" " " No 54	10
Spencer, Senard Bros No 4	6

Knapp's Creek.

Summit, 1 Willets No 29	6
Norton, F W Mitchell No 19	10
Borden, John Looker No 22	8
Berger Hollow, Shattuck & Son No 4	6
Sprague, E E Sprague	5
Lamphear, D J Keyes	dry
Atwater, Stewart & Cannan	8

Foster Brook.

E T Co, Coleman, Penny & Boyne No 12.	6
C B & H, Page, Walker & Co No 10	6
" Johnson & Co No 9	6
" Roberts & Co No 13	6
" lot 61, Fitzgibbons & Evans No 3	5
" J Stettheimer No 3	5
Foster, Tucker, Rolfe & Burns	5

Four-Mile.

Burlingame, Union Oil Co No 8	10
Fries, Franchot Bros No 11	7
Stevens, Book & Rhodes No 10	7
" Wm Stevens	7

Indian Creek.

Hamlin, Forest Oil Co No 39	10
Weston, Ernst, Perrin & Ramsay No 3	6
" J L McKinney & Co No 4	10
" " No 5	10
" Ernst, Perrin & Co	6
Wright & Sawyer, L H Ballard No 4	6
G & A, Gallagher Bros No 13	6
Barse, Union Oil Co No 39	10

Cole Creek.

Bing'm lot, 539, Union Oil Co No 46	40
" 496, " " No 3	10
" 577, Rose & McLeod No 6	8
" 539, C P Byron No 11	10
" 497, Jack, Brawley & Co No 2	10

Kinzua.

Warraht 3076, Union Oil Co No 63	15

Miscellaneous.

Freeland, Conroy & Johnson No 2	dry
Frank Waters, Stow & Co No 1	dry
Kahm, E T Johnson	dry

Wells completed 52
Production 382
Dry 4

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Marsh, Collins & Morse No 7	6
Richardson, T G Phillips	dry
Morrison heirs, Anchor Oil Co No 10	15
Island, Wm Fogel	2
Weed, Duke & Harris	dry

Warren, etc.

Wardwell, Benedict & Rockwell No 34	8
" Palmer & Thompson No 5	6
North Warren, Rhumor & Co	3
" Scott, Trubey & Co	dry
Hoffman, Nesmyth No 3	3

Wells completed 10
Production 43
Dry 3

Clarendon.

49, Lorran & McWilliams	dry
54, O W Beatty & Bro No 42	8
78, "	7
463, Newell No 4	3
496, Fred Hue No 14	6
497, " No 2	6
497, C C Duffield No 10	6
79, Rogers Bros	5
80, J E Tucker No 10	6
105, Sam Tait Jr No 4	6
107, W B Roberts & Son No 16	6
105, Hackett & Shirley No 3	6
162, J A Dower No 7	5
463, D Riddlesperger No 1	10
463, Neill & Lammers No 4	6
464, Branch & George No 3	4
460, Waid & Law	dry
495, Ulman, Steck & Co	2
526, Keatley Bros No 15	7
526, E O Emerson No 15	5
526, " No 16	6
527, F H Rockwell & Co No 22	6
488, Capt E H Barnum	dry

Wells completed 23
Production 116
Dry 3

Tiona.

81, Doc Jenkins No 4	8
83, Booth Bros No 5	8
74, Fertig, McKinney & Co No 3	6
75, " No 5	6
81, " No 7	6
81, " No 8	6
109, O F Schonblom No 11	5
108 Pat Connors	6
111, Wheedon & Shearer No 2	3
160, Gilbert Oil Co No 33	6
160, D Gardner No 8	6
161, Helm & Mealey No 7	8
164, Moore, Wark & Langworthy No 6	6
165, McKelvey & Bert No 15	7
201, Mandell Oil Co No 12	5
201, Wesley Chambers No 7	6
201, " No 8	6
205, Smith, Bright & Co No 4	6
240, Pickett & Farnsworth No 5	6
241, L Kraeer & Co No 23	8
242, E O Emerson No 2	5
281, Horton, Crary & Co No 5	8
284, Watson & Mitchell No 6	6
284, Anchor Oil Co No 3	5
284, " No 4	10
284, Pickett & Stone No 2	6

Wells completed 26
Production 164
Dry 0

Cooper District.

369, Clapp, Lockhart & Elder No 7	10
407, Cochran Bros No 11	10
407, " No 12	10
E T Co, Fertig & McKinney	dry

Wells completed 4
Production 30
Dry 1

Balltown.

756, Miller & O'Dell	dry
3195, N F Clark No 18	dry
3195, " No 19	25
3194, Porcupine Oil Co No 37	20
4823, Balltown Oil Co No 31	5
5215, May, Kelley & Grandin No 47	dry
5214, James Welsh No 4	50
4197, Clark & Berry	6

Wells completed 8
Production 106
Dry 3

Kane.

384, Andrews & Co	20
385, Kane Oil Co	100
419, Union Oil Co	120
420, Coast & Thyng No 2	75
420, " No 7	75
421, Mallory & Co No 1	75
421, " No 2	100
424, Lincoln & Co No 1	40
424, Fertig & Co No 1	50
424, Shirley & Hochstetter No 2	75
424, " No 3	75
424, " No 4	75
424, Murphy & Co No 2	30
425, Union Oil Co No 1	gas
425, " " 6	65
425, " " 8	80
425, " " 9	65
425, " " 10	40
425, " " 11	70
425, " " 12	50
425, " " 13	70
425, " " 14	30
425, " " 15	20
425, " " 16	75
425, " " 17	75
426, " " 18	75
425, " " 19	65
426, Kane Oil Co " 6	100
426, " " 8	125
426, " " 9	125
426, " " 12	150
3767, Craig & Cappeau No 6	400
3767, " No 7	
3767, " No 11	
3767, " No 13	
3767, " No 14	
3767, Finnegan & Monroe No 1	30
3767, " No 2	40
3767, Craig & Cappeau & Ass Producers.	10
3771, Clemenger & Co	dry
3775, lot 11, Kane Oil Co No 3	50
3775, lot 12, John T Griffith No 3	50
3775, " 13, P T & W C Kennedy No 3	25
3775, " 13, " No 4	25
3775, " 14, F W Andrews No 2	25
3775, " 20, Bayne & Fuller No 2	10
3775, " 21, Brenneman & Co No 1	10

Wells completed 47
Production 2865
Dry 2

Grand Valley.

Neal, L B Wood & Co	dry
Lot 105, Fanny Watson, Emery, Ralston & Co	dry
Lot 186, W W Benedict & Co No 3	30
Lot 197, " No 1	30
Dunderdale, Dunderdale Oil Co No 17	2
Blakeslee, Miller Bros & Co No 2	25
Merritt, " No 1	10
Robinson, Tucker & Loan	dry
Hunter, Joseph Millison No 1	10
Carpenter, W J Jackson & Co No 2	30
Emerson, Benson & Co No 1	10
J Hunter, H L Boyd & Co	20
Farrell, Nelson Farrell, No 2	5
Wheelock, Jesse Wheelock No 3	8
Lot 186, Sam Stewart No 2	30
Reno Oil Co, Reno Oil Co No 2	6
Campbell, Holman & Hopkins No 2	15
Philadelphia tract, W W Hague	8

Miscellaneous.

Jefferson Co (Brookville) Keatley Bros	dry
Forest 3190, Curll, Campbell & Co	dry
Shamburg, Thornton	3
" Unknown	5

Wells completed 22
Production 247
Dry 5

Lower Country.

Venango and Other Sections.

Farm. Operator.	Barrels.
Neilltown, Black Bros	dry
" Lander, Black Bros No 10	10
Columbia, Columbia Oil Co No 165	10
Kirkwood, J Kirkwood	15
McBride, McBride & Roe	3
Frampton, Frampton & Turner No 13	6
Walnut Bend, Fisher & McNims	dry
Brundaage, Brundred	3
Henderson, Kulp & Stewart	dry
Pleasantville, Emery & Skinner No 2	4
Epley & Reem, Epley & Reem	dry
H M Davis, Hughes & Co	4
Cross, Hollister & Co	3
Petroleum Centre, Benninghoff	4

Tarkill.

Webb, Taylor, Torrey & Murphy No 11	dry
" " No 12	20
" " No 13	60
Benton, Benton Oil Co No 2	30
Alex Hill, Duncan & Fisher No 1	50
Lawley, Cornwall & Hasson No 1	30
" " No 2	10
" McKeever & McPherson	gas
Stover, Holt & Dorrington	dry

Rockland or Red Valley.

John Hetzler, Dale Bros No 8	20
" " No 9	15
H M Dale, " No 1	5
R Porter, Flynn Bros No 8	10
R Porter, Goodrich & Salisbury No 5	30
" " No 6	20
D Porter, " No 6	20
" " No 7	25
Hetzler, H P Boyd & Co No 5	20
Wicks, W H H Piper No 8	50
" " No 9	40
Phil & Bost tract, Piper & Bradley No 1	dry
Cox, Forest Oil Co No 4	dry
J Hetzler, Morgan & Fox No 4	30
J Jolly, Leckey & Foster No 7	12
Johnson, Heydrick & Putnam No 2	12
Showers, Hulings Bros No 3	dry
Hetzler, Rider & Co	10
Gehrhart, Gibson & Co	dry
G & S, Grant & Sheasley	dry
Shippen heirs, Dale & Shafer	dry
Hetzler, Hines & Jack	dry

Vicinity Emlenton.

Eli Osman, N Mackin	5
W P Grant, Adams & Parker No 1	6
Dr Crawford, Wm Weaver No 5	10
W T Crawford, H Crawford & Co	dry
J W Smith, Sheasley & Comstock No 6	10
Grant, J P Crawford & Co No 4	8

Wells completed	51
Production	620
Dry	15

Clarion.

Cogley Run.

Rikenbrode, Col John J Carter No 7	3
W L Hess, W L Hess No 4	10
" Morrison No 6	15
Edmunds Heirs, Urquhart & Lavens No 6	15
John Henel, Koch Oil Co No 5	10
" " No 6 est	20
Amos Strutman, Booth, Gifford & White No 1	5
Kinnemuth, Pagett & Co No 3	5
Widow Dietrich, Wolf & Bell No 4	10
John Herrmann, Wolf & Bell No 7	12
" " No 8	10
Sheffler, S Y Ramage No 4	30
Lewis Delo, Kribbs, Mays Bros & Co	dry
Stumpner, John Deitrich	dry
E Miller, Shafer & Co	dry
Black, Jacob Black & Sons	dry
Baker, D O White	15
Wagner & Curl, Hite & Dobson est	8
Henry Kiser, Yonkers & Black	1
Leeper, Leeper & Co	dry
Sheets, Jenerett est	5
Moore, Snyder, Loots & Co	dry
McCammont, Blyson Run Oil Co	dry
Wagner & Curl, Wagner & Curl est	2

Wells completed	24
Production	176
Dry	7

Butler and Armstrong.

Titley, Titley & Bros No 4	60
" " No 5	60
Barnhart, Westerman & Pontius No 2	60
" " No 3	20
R W Barnhart, McTamany & Co est	2
McKeever, Showalter Bros & Hartman No 7	60
" " No 8	40
" " No 9 est	50
" " No 10	80
" " No 11	80
Thos Glenn, Fetzer, Dale & Larken No 2	60
" " No 3	40
" " No 4	50
Dulity, Ireland & Hughes No 2	50
" " No 3	50
" Greenlee & Co No 2	20
Geo Burford, Dale, Wolford & Co No 3	15
Miller, Dennison & Co No 4	30
" Kiefer, Gibson & McGrew	10
Bromfield, Boyd & Co No 4	10
Duffey, McBride & Campbell	10
Rape, Fishell & Connors	5
Snyder, Myers & Simcox	dry
Patterson, Phillips Bros No 2	dry
Squire Reatt, Fisher Oil Co	dry
Kansler, Hunter & Cummings	dry
McKee, Sutton, Jennings & Co	dry
David Mobly, Sugar Creek Oil Co	gas
Martinsburg Kelley, Meldren & McKessock	15

St. Joe.

Widow Martin, Campbell & Murphy	2
Widow Witt, McGuire & Co	25
Lane, P C L & P Co No 2	6
Shultz, Gordon & Co est	25

Thorn Creek.

Maharg, Bolard & Co	15

Wells completed	34
Production	955
Dry	6

Washington.

Weirich, Coast & Co No 1	30
Hayes, " No 1	10
Clark, Thayer Oil Co No 2	1750
Shirls, H Shirls	150
Wylie, Munhall & Co	250
Taylor, Union Oil Co	450

Wells completed	6
Production	2640
Dry	0

Shoustown.

Montour, Dorrington	dry
McCoy heirs, Raccoon Oil Co	50
Chas Eachel, "	75
Wallace, "	75
John Morrow, "	15
Isaac Harper, "	20
McCain, Galey Bros	10
Andrew Leitch, Galey Bros	dry
McCartney, C E Lovell & Co	dry
McCleaster, Philadelphia Co	dry
Doctor, Townsend & Co	dry
Baker, S M Ross	dry

Wells completed	12
Production	245
Dry	6

DRILLING WELLS.

RIGS UP AND BUILDING APRIL 30, 1886.

Allegany Field.

Scio.

Lot. Owner.	Depth.
3, Coyle & Simon (old)	rig
12, Allen & Morse (old)	rig
12, Griffin & Co No 10 (old)	rig
50, Pease & Coyle No 9 (old)	rig
51, (E J Norton) Duke & Norton Oil Co No 64	400

New rigs	0
Old rigs	4
Drilling	1
Total	5

Alma.

2, H L McMullan & Co No 15	100
3, Weeter & Baldwin No 5 (old)	rig
19, (Allen) Duke & Norton No 67	300
21, (Noble), E G Rogers & Co No 7	300
23, Vance & Hor on (old)	2 rigs
24, W F Jones (old)	rig
26, Willetts & Elliott (old)	rig
28, F N Whiteomb No 2 (old)	rig
37, (Randall) L & E F Willetts No 3	rig
37, A A Almy No 2	rig
37, Perrin & Young No 11	sand
37, " No 14	rig
38, Koch Bros No 9 (old)	rig
51, Sawyer & Co (old)	rig
78, Rathbun & Backer No 5	drilling
86, Shirley & Hochstetter No 11	1200
86, " No 12	rig bldg
107, " No 9(old)	rig
86, Brown & Thornton No 4	rig
88, Duke & Co (old)	rig
120, McCalmont Oil Co No 10 (old)	rig
142, Dean & Smith No 5 (old)	rig

New rigs	5
Old rigs	12
Drilling	5
Total	22

Wirt.

1, (Riley Allen) Emp Gas & Fuel Co No 2 (old)	rig
34, (Drum) W R Cook & Co No 3 (old)	rig
47, (R Mulkin) Applebee & Mix No 1	300
47, (Voorhees) " No 2	rig bldg
48, (Church) Nile Oil Co No 1	300
48, (Howard) " No 1	rig
48, (Hicks) Love & Co No 4	rig
48, (Hicks) Chas Phillips No 5	300
48, " " No 6	rig
52, (Burdick) Wilson Bros & Ackerly No 12	drilling
52, " " No 13	rig
55, (R Mulkins) P M Shannon & Co No 2 (old)	rig
55, (Orson Witter) " No 1 (old)	rig
55, (Voorhees) S C Rhodes & Co No 2 (shut down)	200
59, (Carnahan) Dow & Barnsdall No 2 (old)	rig
59, (Labar) Reynolds & Co No 3	100
59, " " No 4	rig bldg
60, (Alvah Jordan) J H Snow No 6 (old)	rig
60, " Lester, Jordan & Co No 3	drilling
61, (Isaiah Jordan) " No 7	drilling
61, (Goodell) C Phillips No 1	sand
61, (Deyoe) Pangborn & Co	drilling
61, (Marshall) Limek ln Club No 2	rig
61, (Deyoe) Moore Bros No 1	drilling
—, (Nichols) Barton & Hammond No 1	drilling

New rigs	7
Old rigs and shut down	7
Drilling	11
Total	25

Bolivar.

12, Wood & Co (old)	rig
23, F C Streeter & Co No 12 (old)	rig
23, Irwin & Morgan No 8	rig bldg
30, Fritz & Lowry No 8 (old)	rig
30, " No 10 (old)	rig
31, W B Irvin No 10	drilling
36, Kilbury & Co No 1	sand

New rigs	1
Old rigs	4
Drilling	2
Total	7

Genesee.

7, Elsessor & Barmore No 5	drilling
11, (Little Genesee) Emp Gas & Fuel Co Limited (for gas) (old)	rig
14, Merwin (old)	rig
22, I Willetts No 14 (old)	rig
22, " No 15 (old)	rig
22, " No 16 (old)	rig
22, " No 17 (old)	rig
22, " No 18 (old)	rig
22, " No 19 (old)	rig
23, Hughes & Coughlin (old)	rig
24, Emery Oil Co No 10	sand
29, William Cranston (old)	rig
38, S E Young (old)	rig

New rigs	0
Old rigs	11
Drilling	2
Total	13

Clarksville.

3, (Millis) Chas Phillips No 2	sand
3, (Alvah Jordan) A B Cottrell No 3	300
3, (M Jordan) M Jordan No 1	rig
3, (A Jordan) Angell Oil Co No 1	rig bldg
5, (Wetberby) Harris, Johnson & Co No 2	drilling
5, " " No 3	rig
5, " " No 4	rig bldg
5, " C Phillips No 1	drilling
5, " Congdon & Warner No 3	drilling
6, (Seever) Ackerly, Barton & Co No 9 (old)	rig
6, (Hamilton) " No 17	drilling
11, (Congdon) " No 18	400
13, (Wixon) Barton, Ackerly & Co No 3	rig
20 (Ernhout) " No 6 (old)	rig
20, " " No 23 (old)	rig
9, Heuston & Breeht No 4 (old)	rig
9, Merrit (old)	rig
10, (Swartwout) Angell Oil Co No 10	drilling
10, " " No 14	drilling
10, " " No 15	drilling
11, (Keller) " No 1	rig
14, (Lane) Lane Oil Co No 3	rig
14, " " No 4	rig bldg
20, (McDougal) Mack Oil Co No 6 (old)	rig
20, " Love, Patterson & Co No 2	300
20, (Butts) M Finnegan No 7	sand

New rigs	8
Old rigs	6
Drilling	12
Total	26

Miscellaneous.

1, North Div, Scio, Middaugh Oil Co — rig
Ashford twp, Cattaraugus Co, Murphy Oil & Gas Co — 800

New rigs — 1
Old rigs — 0
Drilling — 1

Total — 2

Bradford Field.

East and West Branches.

Dent, Whitney & Wheeler No 40 (old) — rig
Lewis Run Tract, Whitney & Wheeler No 9 (for gas) — 800
Cary, W H Duncan No 4 (old) — rig
Watrous, Waugh & Porter No 2 — drilling
Dent, P C L & P Co No 66 — rig
" " No 67 — rig bldg
Bingham, lot 151-54, Union Oil Co No 21 — rig
Warrant 2268, R J Straight No 18 — 1500
" 2258, Van Vleck & Mitchell No 36 — 1200
" 2258, " No 37 — rig bldg
J N Brown, N J Demming No 5 — drilling
Havens, Phillips & Co No 1 — 300
B O Co, Western Oil Co No 7 (old) — rig
Mack, Columbia Oil Co (old) — rig
" Fisher Oil Co No 19 (old) — rig
King, Carman & Co — rig bldg
Hatfield, Wesley Chambers (old) — rig
Whitney & W, S G Elliott No 3 — 100
Cutting, Bovaird & Co No 1 — drilling
Clark, P C L & P Co No 7 — rig
Hinchey, McMurray Bros No 6 (old) — rig
Foster, C H Foster No 2 (old) — rig
McKeown, Sawyer & Co No 1 — drilling
Paton, McClure & Co (old) — rig
Clark, McCray Bros (old) — rig
Willis, " (producing) — 550

Quintuple.

25, C W Scofield (old) — rig
44, J W Humphrey (old) — rig
11, Camp & Zane No 13 — 1500
139, Booth Bros No 2 — drilling
220, Clark, Stearns & Co (old) — rig
260, E T Howes (old) — rig

New rigs — 6
Old rigs and shut down — 15
Drilling — 11

Total — 32

Kendall Creek.

Fisher, Larrabee & Whedon No9(old) — rig
Lafferty, Van Vleck & Gifford No 5 — drilling
" " No 52 — rig
Moore, P C L & P Co No 14 — rig
Mehan, J P Zane No 11 — rig

New rigs — 3
Old rigs — 1
Drilling — 1

Total — 5

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) — rig
Borden, T P Thompson (old) — 2 rigs
" " — rig bldg
Duke, J West No 7 (old) — rig
" " No 8 (old) — rig
Middaugh, A C Hawkins No 9 — 800
Norton, F W Mitchell No 20 — rig
Baker, Baldwin & Co No 1 — rig
Erskine, G N Grow No 3 — rig bldg
Vaughn, Martin & Co No 2 — drilling
Ellis, Dr Christman — 1000
Rixford, Alfred & Co No 1 — 300
Dimick, Elder Bennett No 2 — sand
Atwater, Stewart & Canan — sand
Boot Leg, C I Robinson No 10 — sand
Keating, Forest Oil Co No 53 — sand
" " No 54 (old) — rig bldg

New rigs — 4
Old rigs — 6
Drilling — 8

Total — 18

Foster Brook.

E T Co, Kervin & Co No 9 — drilling
" " No 10 — rig
" E T Co No 51 — rig bldg
C B & H, Juter & Yager (old) — rig
" Bulger & Dana No 4 — sand
" Clark, Cooper & Co No 9 (old) — rig
" Burns & Monroe No 7 — 1000
" Mosier Bros No 9 — drilling
" lot 53, Fitzgibbons & Evans No 4 — drilling
" J Stettheimer No 6 — drilling
" Roberts & Co No 14 — rig
" Hackett & Hutchinson No 1 — rig
" Watson Oil Co No 42 — rig
Wilcox, Allen (old) — rig

New rigs — 5
Old rigs — 3
Drilling — 6

Total — 14

Four Mile.

Van Campen, Caldren & Vance (old) — rig
" Jas K Van Campen No 2 — 300
" " No 3 — rig
McCartney, H B Davis No 21 (old) — rig
Dye, Manhattan Oil Co No 5 (old) — rig
Stevens, Book & Rhodes No 11 — drilling

New rigs — 1
Old rigs — 3
Drilling — 2

Total — 6

Indian Creek.

North Branch, J D Downing & Co (old) — 2 rigs
Hamlin, Miller & Odell No 4 (old) — rig
" Forest Oil Co No 40 (old) — rig
" " No 41 (old) — rig bldg
Weston, J L McKinney & Co No 6 — sand
" Ernst, Perrin & Ramsey No 4 — drilling
" " No 5 — rig
" Murphy, Hogan & Williams No 8 — sand
" " No 9 — rig
" Ernst, Perrin & Co — drilling
G & A, Gallagher Bros No 14 — drilling
Barse, J Stettheimer No 1 — rig bldg
Barrett, Page & Van Campen — rig
Shattuck, Bussell & Johnson No 1 — 300
" " No 2 — rig
" Whitney & Black No 1 — rig
" Wm M Brown No 7 — 500
" " No 8 — rig
Keyes, D J Keyes No 6 — drilling

New rigs — 7
Old rigs — 5
Drilling — 8

Total — 20

Cole Creek.

Warrant 2263, Union Oil Co No 6(old) — rig
" 2263, " N 7(old) — rig
Bingham, lot 497, Union Oil Co No 3 — drilling
" lot 69, Bennett & Thompson No 11 (old) — rig
" lot 585, Asso'd Prod Co No 58 — 1900
" lot 591, " No 59 — rig
" lot 477, Tucker & Rolfe No 3 (old) — rig
" lot 5 8, C P Byron No 10 — 50
" lot 497, Jack, Brawley & Co No 3 — 200
" lot 497, " No 4 — rig

New rigs — 2
Old rigs — 4
Drilling — 4

Total — 10

Kinzua.

Warrant 3076, Union Oil Co No 62 — drilling
" 3076, " No 64 — rig
" 3076, " No 65 — 600
" 2243, Emery Oil Co No 48 — sand
" 2243, " No 49 — rig

New rigs — 2
Old rigs — 0
Drilling — 3

Total — 5

Miscellaneous.

Warrant 4907, Royal Oil Co — 1000
Lillibridge, Mike Casey & Co — 300
J Riehler, Smart Aleck Oil Co No 1 — drilling
Sub 9 of Range 9, Stevens Bros — drilling
Five-Mile (Mrs Chamberlain) Knox & Co No 1 — drilling

New rigs — 0
Old rigs — 0
Drilling — 5

Total — 5

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

English, Graveyard Oil Co — sand
S S Harris, Dr VanScoy (old) — rig
Weed, Morse & Collins No 2 — 200

Warren, Etc.

Wardwell, Benedict & Rockwell, No 3 — drilling
" " No 36 — drilling
" " No 37 — rig
Hemlock, Miller & Odell — sand
Willie, Beatty & Pickett (old) — rig
North Warren, Leger — rig
Roy, James Roy (old) — rig
Quaker Hill, Cramer & Cogswell (old) — rig

New rigs — 2
Old rig — 4
Drilling — 5

Total — 11

Clarendon.

35, (Mooney) Bell & Hazeltine — drilling
35, Murphy & Hennessey No 5 — sand
35, " No 6 — rig bldg
35, J Smith & Son No 5 — drilling
54, O W Beatty & Bro — drilling
54, " — rig
80, D J Thayer No 14 — 100
80, Johnson Irvine No 7 — drilling
80, " No 8 (old) — rig
10, Hackett & Shirley No 4 — 400
105, R I Shugert — rig
107, W B Roberts & Son No 17 — drilling
162, O'Donnell & Tait No 1 — 300
162, J A Dower No 8 — rig
463, Fred Hine No 1 — rig bldg
497, " No 3 — rig
463, Maginnis No 6 — drilling
463, Neill & Lammers No 5 — rig
463, D Riddlesperger No 2 — drilling
463, " No 3 — rig bldg
463, J B McElwaine No 7 — drilling
495 M Matson No 1 — rig
495, Conley Bros No 6 — sand
495, " No 7 — rig bldg
527, F H Rockwell & Co No 23 — rig
531, S Shoat & Son No 1 — drilling
531, " No 2 — rig bldg
531, Keegan, Sage & Co No 1 — rig bldg
558, Goss, Goat & Haskell No 8 (old) — rig
558, Goat Bros — drilling
558, F S Tarbell — rig bldg

New rigs — 14
Old rigs — 2
Drilling — 15

Total — 31

Tiona.

81, Fertig, McKinney & Co No 3 — drilling
81, " No 4 (old) — rig
81, " No 5 (old) — rig
81, " No 6 — drilling
83, " — 6 rigs
103, lot 15, " — drilling
160, Gilbert Oil Co No 34 — 200
160, O'Donnell & Tobias No 7 — 600
160, " No 8 — rig
161, " No 12 — 300
161, Helm & Mealey No 8 — rig
164, Moore, Wark & Co No 7 — rig
200, Bovee & Duck No 10 (old) — rig
202, Mandell Oil Co No 13 (old) — rig
202, " No 14 (old) — rig
201, " No 9 (old) — rig
201, Wesley Chambers No 9 — drilling
201, " No 10 — rig
205, Smith, Bright & Co No 5 — drilling
205, " No 6 — rig bldg
205, Booth Bros No 15 — rig
205. Emerson & Farnsworth No 12 — rig
240, T Farnsworth No 1 — rig
240, F W Winger No 5 (old) — rig
241, L Kraeer & Co — drilling
241, " No 25 — rig bldg
244, Horton, Crary & Co No 8 — sand
244, " No 9 — rig
244, " No 10 — rig
244, " No 11 — rig
244, " No 12 — rig
244, " No 13 — rig
244, " No 14 — rig
245, Shoelkopf, Horton & Co No 6 — rig
281, Horton, Crary & Co No 6 — 700
28 , Watson & Mitchell No 7 — 200
284, Hackett & Shirley No 4 — 300
284, " No 5 — rig
284, Anchor Oil Co No 5 — drilling
284, " No 6 — drilling
284, " No 7 — rig
284, Pickett & Stone No 3 — sand
284, " No 4 — 500
284, " No 5 — rig bldg
320, Windsor & Roberts — rig

New rigs — 25
Old rigs — 7
Drilling — 17

Total — 49

Cooper District.

364, Clapp, Lockhart & Elder No 8 — rig
407, Shank & Stewart No 9 (old) — rig
407 " No 13 (old) — rig
407, Cochran Bros No 13 — 100

New rigs — 1
Old rigs — 2
Drilling — 1

Total — 4

Balltown.

3195, (Crisman) N F Clark No 14(old) — rig
3195, " " No 20 — 100
3194. Porcupine Oil Co No 38 — drilling
3194, " No 39 — rig
5215, May, Kelley & Grandin No 48 — drilling
5215, " No 49 — drilling
5214, Anchor Oil Co No 1 — 100

New rigs — 1
Old rigs — 1
Drilling — 4

Total — 6

Kane.

345, Clinton & Swaine ..... sand
346, T N Barnsdall ..... drilling
379, R B Stone ..... drilling
382, C H Rathbun ..... rig bldg
384, F W Andrews & Co No 2 ..... drilling
384, Shirley, Hoehstetter & Co No 1 300
385, Smith & Co ..... rig bldg
385, Kane Oil Co No 26 200
385, " No 27 ..... rig bldg
385, " No 28 ..... rig bldg
385, Howe, Lavens & Co No 1 600
385, " No 2 300
385, " No 3 ..... rig
385, " No 4 ..... rig
385, " No 5 ..... rig bldg
385, " No 6 ..... rig bldg
386, Markham & Rose ..... rig
418, Porter, Gillmor & Quick ..... rig bldg
419, Union Oil Co No 2 ..... drilling
419, " No 3 500
419, " No 4 400
419, " No 5 300
419, " No 6 300
420, Kane Oil Co No 21 ..... drilling
420, " No 22 ..... drilling
420, " No 23 ..... drilling
420, " No 24 ..... drilling
420, Coast & Sons No 3 600
420, " No 4 800
420, " No 5 900
420, " No 6 2100
420, Coast, Sons & Thyng No 8 ..... rig
420, " No 9 1200
420, " No 10 ..... rig
420, " No 17 300
420, " No 18 300
420, " No 19 300
420, " No 20 300
420, " No 21 300
421, Mallory & Co No 3 2000
421, " No 4 300
421, " No 5 200
421, " No 6 200
421, " No 7 ..... rig
421, P T & W C Kennedy No 1 1500
421, " No 2 ..... rig
421, Shirley, Hoehstetter & Co No 1 500
424, Lineoln & Co No 2 100
424, " No 3 ..... rig bldg
424, Fertig & Co No 2 ..... rig bldg
424, Shirley & Hoehstetter ..... rig
424, Lineoln, Steele & Co No 2 ..... drilling
424, M K McMullin (old) ..... rig
424, Tennent & Co No 2 200
425, Union Oil Co No 20 ..... sand
425, " No 21 ..... drilling
425, " No 22 900
425, " No 23 800
426, Kane Oil Co No 7 ..... drilling
426, " No 10 500
426, " No 11 1500
426, " No 13 ..... rig bldg
426, " No 14 ..... rig bldg
3132, Hemlock Oil Co No 1 ..... sand
3132, " No 2 ..... sand
3153, Merchants' Oil Co ..... drilling
3754, Union Oil Co (old) ..... rig
3767, Craig & Cappeau No 5 ..... drilling
3767, " No 12 ..... drilling
3767, " No 16 ..... rig bldg
3767, " No 17 ..... drilling
3767, " No 18 300
3767, " No 20 ..... rig
3767, " No 21 ..... drilling
3767, " No 22 ..... rig
3767, " No 23 ..... rig
3767, " No 27 ..... rig
3767, " No 41 ..... rig
3767, Ass Producers & Craig & Cappeau No 4 ..... drilling
3767, " No 5 ..... rig
3767, " No 6 ..... rig
3767, " No 7 ..... rig
3767, Finnegan & Monroe No 3 100
3767, " No 4 ..... drilling
3767, Roy & Archer No 1 ..... sand
3767, " No 2 800
3775, Kane Oil Co No 4 ..... drilling
3775 lot 12, John T Griffith No 4 1800
3775 lot 13, P T & W C Kennedy No 5 300
3775 lot 13, " No 6 ..... sand
3775 lot 13, " No 8 1800
3775 lot 13, " No 10 ..... rig
3775 lot 14, Andrews No 4 700
3775 lot 5, Thompson & Denman (old) ..... rig

New rigs 29
Old rigs 3
Drilling 62
Total 94

Grand Valley.

Lot 186, L B Wood & Co No 7 ..... sand
" 186, " No 8 ..... rig
" 196, " No 1 ..... sand
" 186, W W Benedict & Co No 4 300
" 197, " No 2 200
" 194, J M Parker ..... rig bldg
Merritt, Miller & Clippens No 2 ..... sand
" " No 3 ..... drilling
" " No 4 ..... rig
" " No 5 ..... rig bldg
Peterson, " No 2 ..... rig bldg
Campbell, Holman & Hopkins No 3 300
" " No 4 300
Mason, " ..... rig
Philadelphia tract, " ..... rig
Lot 185, Mead, Beatty & Co ..... rig
Kelley, Mull & Morgan ..... rig
Zane, Fertig & Wood No 1 ..... drilling
" " No 2 ..... rig bldg
Lot 196, Groves Bros No 1 100
" 196, " No 2 ..... rig
" 343, Colby ..... rig
Pierce, R H Lee ..... rig
Lot 189, Morgan & Co ..... rig
J Hunter, H P Boyd & Co No 2 500
" " No 3 ..... rig
" Jos Millison No 2 ..... drilling
Goodwell, Bovee & Duck No 1 100
" " No 2 ..... rig bldg
Proper, W W Hague (old) ..... rig
Carpenter, W J Jackson & Co No 3 200
Emerson, Benson & Co No 2 ..... rig
C H Ames, Daniels & Co No 2 ..... sand
Farrell, Nelson Farrell No 3 ..... rig
Lot 186, Sam Stewart No 3 200
" 186, " No 4 ..... rig bldg
Drake Pet Co, G P Kepler No 8 50
Reno Oil Co, Reno Oil Co No 3 ..... rig
Von Gilder, Boiles & Co ..... rig
Newton Station, " ..... rig

Miscellaneous.

McKean 232, Pennsylvania Gas Co ..... drilling
Elk county, Grant & Horton ..... drilling
" Short, Dunham & Co ..... drilling
Forest, Clark & Hughes ..... drilling
Pittsfield, Wesley Ford ..... rig bldg
Garland, McCray & Co ..... rig

New rigs 24
Old rigs 1
Drilling 21
Total 46

Lower Country.

Venango and Other Sections.

Allison, Fisher Oil Co No 11 (old) ..... rig
Benninghoff, Oil City Fuel Sply Co No 1 ..... drilling
" " No 2 ..... drilling
W Ecke, " ..... drilling
Cooperstown, Brundred ..... drilling
Chas Lake, Loos & Co No 3 300
Diamond, " ..... rig bldg
" Darr & Manning ..... rig
Cope, Laughlin & Co 400
Pin Oak, J B Southman ..... drilling
H Heckathorn, Phinney & Co ..... rig bldg
Ten Mile Bottom, John Glass & Co ..... rig bldg
Columbia, Columbia Oil Co ..... rig
Kirkwood, J Kirkwood ..... drilling
" " ..... rig
Pioneer, Davis ..... drilling
Plumme, Unknown ..... rig
Griffin, Putnell (old) ..... rig
Widow Brown, Stewart & Co ..... sand
Young, Octave Oil Co No 20 ..... rig
Jennie, (Black Ash) Emery & Schuyler No 1 ..... sand
Cherrytree twp, (Wilson) Anchor Oil Co ..... rig
Smokey, (Mellott) Dr Galbraith No 2 ..... rig
Osmer, Galbraith & Parker (old) ..... rig
Cornplanter, (Winger) Shelsley & Galbraith ..... drilling
Snider, D McElphatrick ..... rig
" " ..... rig
Van Buren Furnace, Fry & Badger ..... rig
Slab Furnace, (Davis) H M Davis ..... drilling

Tarkill.

Webb, Taylor, Torrey & Murphy No 8 (shut down) ..... sand
J P Hill, " No 10 rig bldg
Webb, " No 14 drilling
" " No 15 rig bldg
Benton, Benton Oil Co No 3 ..... sand
" " No 4 100
" " No 5 ..... rig
Baum, W C Baum & Co No 3 (old) ..... rig
Lawley, Cornwall & Hassan No 3 ..... drilling
" " No 4 100
Shafer, Kane & Bond (old) ..... rig
Dolan, S P McCalmont No 1 (old) ..... rig
" " No 2 ..... rig
Alex Hill, Duncan & Fisher No 2 50
" " No 3 ..... rig bldg
" Holt & Dorrington No 1 ..... rig
Martie, McKeever & McPherson ..... rig
Linn, Chas Linn & Co 700
Rose, J Kelley ..... rig bldg
Judge McCalmont, P Canning ..... rig bldg
Swarms, Fertig & Stewart (old) ..... rig

Rockland or Red Valley.

Black heirs, Dale Bros No 2 (old) ..... rig
Bell, Dale, Fisher & Co ..... drilling
R Porter, Flynn, Bros & Co No 9 ..... sand
D Porter, Goodrich & Salisbury No 8 300
" " No 9 rig bldg
Shafer, Heydrick, Hite & Co (old) ..... rig
Wicks, W H H Piper No 10 ..... drilling
" " No 11 ..... rig
Hetzler, Rider & Co No 2 ..... rig bldg
Cox, Forest Oil Co No 5 ..... rig
J Jolly, Leckey & Foster No 8 ..... sand
Johnson, " 300
G & S, Grant & Sheasley No 2 (old) ..... rig
Gates, H J Morton & Fuller ..... sand
Glenn, Wilson & Smith ..... rig
Cox, Heydrick & Co ..... rig

Bullion.

McMillan, Farmer & Co 400
Porter, Porter Bros 500
Hovis, Hovis & Co ..... rig

Vicinity Emlenton.

D Russell, Baum & Co (old) ..... rig
Porterfield, A A Hopkins (old) ..... rig
Elder, Wilson Bros ..... sand
Robert Grant, Bennett & Allen ..... sand
Dr Crawford, Wm Weaver No 6 ..... rig
Seizel tract, Thomas & Jamieson No 6 600
J W Smith, Sheasley & Coustock No 7 ..... sand
Six Points (Aiken) Flynn Bros ..... rig bldg
Jones, Stevens & Co 500
Jamieson, Barnes & Co ..... drilling
Sandy Point, Viets, Daniels & Co ..... rig bldg
Tatsworth, Kries & Klies ..... rig bldg

New rigs 33
Old rigs 13
Drilling 35
Total 81

Clarion.

Berlin, Patterson, Leedom & Hayes No 14 (old) ..... rig
" " No 15 ..... rig
Fisher, Staley, McDonell & Deitrich (old) ..... rig
W L Hess, Morrison No 7 ..... rig
Beals, Brown, Whitehill & Co (old) ..... rig
" Korner & Co 400
" Beals Hunter & Co No 9 700
" " No 10 ..... rig
E Slicker, Painter & Co (old) ..... rig
John Hendel, Koeh Oil Co No 7 ..... rig
Deitrich, Roess Bros ..... rig bldg
J Miller, Shaffer & Sheasley No 2 600
H J Smith, Shaffer & Sheasley (old) ..... rig
John Herrmann, Wolf & Bell No 14 ..... rig
Catherman, Shreffler & Co No 1 800
Berlin, Berlin & Son ..... sand
Shreffler, S Y Ramage No 5 ..... rig bldg
" Hall & Co No 3 ..... sand
Deitrich, Kale Bros No 3 350
Widow Deitrich, Pagett & Co No 2 200
Lloyd, Ritts (old) ..... rig
——, Pagett & Co ..... rig bldg
Fern, Booth & White No 9 ..... rig
Heeter, Hulings No 4 500
W Mong, Whitehill & Chambers No 3 ..... rig
Ulman, Emenburg Oil Co ..... rig bldg
W N Wilson, Kale & Co 400
Brenneman, Swartzfeger 800
Wagner & Curl, Wagner & Hahn ..... rig
Hartman, Jacob Hahn (old) ..... rig
Banner, Banner Bros 750
Wagner & Curl, Ritts ..... rig
Starr, Starr & Co 600
McCummings, Oak Shade Oil Co No 2 800
Dougherty, Dubois Oil Co ..... rig
Berlin, Berlin & Son 300
Perry township, Petrolia parties ..... drilling
" O P Miller farm Dale Bros ..... drilling
" Logue Bros (old) ..... rig
Vowinkle, A A Rowe & Co ..... rig
Maysville, Sedwick & Co ..... drilling

New rigs 15
Old rigs 8
Wells drilling 18
Total 41

Butler and Armstrong.

Kesselman, Bott & Story (old) ..... rig
J Pontius, Lynch & Co (old) ..... rig
McCrea, Smith & Boyd (old) ..... rig
Titley, Titley & Bros No 6 ..... rig
" " No 7 ..... rig
Black, Ross, Reynolds & Co (old) ..... rig
Barnhart, Westerman & Pontius No 4 300
" " No 5 ..... rig
Duffy, Irelan & Hughes No 4 300
" " No 5 ..... rig bldg
" " No 6 ..... rig bldg
" Greenlee & Co No 3 ..... rig
" Glenn, McCafferty & Co 1200
Frederick, Jacob Frederick Oil Co No 2 500
" Simpson & Brady ..... rig
Miller, Dennison & Co No 5 ..... rig bldg
" Denni on & Fleegler No 1 ..... rig
" W G Crawford & Co ..... rig
Black, Campbell & McBride 300
" Forquer Bros & Co No 1 1300
Rupert, Leidecker & Crouse ..... sand

Sechler, Kittanning Co	rig
Miller, Heeter & Co	rig
Mortland, Thompson, Brown & Hoover	rig bldg
Glenn, W P Turner & Co	1000
Frederick, Simpson & Brady	rig
Minteer, Brody & Co	300
John Rogers, Branch Creek Oil Co	rig
Duffey, McBride & Campbell No 2	rig
Dolan, Dolan & Co	rig bldg
Jefferson twp, Gibson & Gahagan	1400
Sarversville, Fisher Oil Co	400
Jefferson twp, Conkle & Co	drilling
Frank Miller, Hemer & Co	rig
Craigville, S D Bell & Co	500
Goehring, Boyd & Semple	1200
Smith, Colbert & Co	1650
Gallagher, Phillips Bros (plugged)	1500
C Mechlin, "	sand
Squire Reatt, Hunter & Cummings (old)	rig
Worthington, Hooks Bros	drilling
Critchlow, Uniontown Oil Co	1200
Perisol, Phillips Bros No 2	800
Renfrew, White & Co No 3	sand
——, Simcox & Myers	rig

St. Joe.

Mulligan, McTamany & Co	200
Widow Witt, Mulligan & Co (old)	rig
Sang, Dennison & Hartman No 7	rig bldg
Lane, P C L & P Co No 2	rig bldg

Martinsburg.

Turner, W J McKee No 7 (old)	rig
D P Kelley, Brawley	500
John Kelley, Kelley & Co	800
Thos W Kelley, Conley Oil Co (old)	rig
R H Campbell, Campbell & Younker	800
Stevenson, Stevenson & Bowser	800
Kelley, Jordon & Klingler	300

Thorn Creek.

Bartley, Phillips Bros No 12	400
Girard, " No 1	rig bldg
Mangell, Bolard & Co No 1	300
——, Iman & Co	rig

New rigs	24
Old rigs	8
Drilling	29
Total	61

Washington.

Gordon, P L & H Co No 3 (old)	rig
" " No 4	2375
Hess, " No 1	2070
McLane, " No 1	2185
Farley, " No 2	1500
Taylor, " No 1	2000
Morgan, " No 1	1000
Weaver, Citizens' Oil & Gas Co No 2 (old)	rig
Weirich, Vandergrifts No 2	1525
Mrs Curry, " No 1	1400
I Wilson, " (old)	rig
Johnson, ")old)	rig
Hall, " N 2	1375
Taylorstown, Vandergrifts	1000
Barre, " No 1	2020
" " No 2	sand
" " No 3	rig bldg
" " No 4	rig bldg
" " No 5	rig bldg
Taylor, Union Oil Co No 2	rig
" " No 3	rig
Mrs Clark, "	650
Wylie, Coast Sons & Co No 1	1600
Lynn, "	1430
Nazer, "	1500
Clark, Thayer Oil Co No 3	850
" " No 4 (old)	rig
Brownlee, Hallam & Co (old)	rig
Clark Heirs, "	2100
Barre Pew & Emerson No 1 (old)	rig
Smith, Craig & Co No 2 (gas)	2130
" " No 3	1200
Cameron, " No 1	2100
" " No 2	700
" " No 3	1200
Lone Pine, Caldwell & Co	1750
Reed, (near Wyland Station) Asso'd Prod Co	1550
Zelt, A P Co & Union Oil Co No 1	600
" " No 2	rig
Munce Heirs, Isaac Willetts No 1	1700
" " No 2	sand
" " No 3	1900
" " No 4	1560
" " No 5	1900
" " No 6 (old)	rig
" " No 7	rig bldg
McGovern, E M Hukill & Co	1150
J Manifold, Pew & Emerson No 2	rig
Kountz, Pew & Emerson No 1	1500
" " No 2	1550
Miller, Pew & Emerson	1000
Barre, " (old)	rig
Wylie, Pew & Emerson No 1	2175
J Munce, "	rig
Wilson, Stettheimer Oil Co	1550
Humbert, Wm Munhall & Co	1800
Byers, R O Meldrum & Sons	1500
Andrews, Wilson, Brenneman & Co	1000
Parsill, Fisher Oil Co	1000
Wade, B B Campbell & Co	900
Lizzie Magahaey, Roth, Peffer & Dyer	1500
Taylor, Galligan & Young	425
Glenn, Robbins & McKinney & Co	2050
Shrontz, Nail Oil Co	1200
West Alexander, Vandergrift & Co	drilling
W J Munce, John McKeown	1650
" " No 2	rig bldg
Coal Center, B C Jackman farm, Hornbake	750
Montgomery, McKinney & Co No 2	50
Shirls, H Shirls No 2	rig bldg
J B Miller, Guffey & Co	rig
Dr Stewart, Fisher & Co	rig bldg

New rigs	13
Old rigs	9
Drilling	50
Total	72

Miscellaneous.

SHOUSTOWN, ETC.

Neville Island, Geo H Dimick & Co	drilling
McGee, Shirley & Hochstetter	drilling
Mt Nebo, Union Oil Co	drilling
Thos Pinkerton, J S McKelvy	rig
Simpson, J M Guffy & Co and J L McKinney & Co	drilling
Ebenezer Duncan, "	drilling
Economy, Dr W G Hunter & Co	drilling
McCoy, Raccoon Oil Co No 2	drilling
" " No 3	drilling
David McCoy, " No 1	rig bldg
Morrow, "	rig
Th s Stevenson "	rig
Wm Hood, " No 2	rig
Widow Stone, Galey	rig
McCoy, "	rig
Jordan, H C Zeigler & Co	rig
" Watson & Co	rig
McCoy, Galey	rig
McCalister, Curtis & Co	drilling
Gilmore, Philadelphia Co	drilling
Widow Thompson, P M Shannon	rig bldg
Georgetown, Boyd & Semple	drilling
" Wench farm, Tabor & Bly	drilling
" Various parties	2 rigs
Mill Creek, Sherman	rig

Greene County.

Fordyce, E M Hukill & Co No 1	drilling
Gregg, " No 1	drilling
Girard, "	drilling
Hathaway, "	drilling
Mt. Morris, "	drilling
Longanecker, " (old)	rig

New rigs	14
Old rigs and shut down	1
Drilling	17
Total	32

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	April, 1886. Wells.	Prod'n.	Dry.	March, 1886. Wells.	Prod'n.	Dry.
Scio	1	5	0	2	10	0
Alma	8	40	0	5	24	0
Wirt	10	64	0	12	52	3
Bolivar	1	4	0	4	23	0
Clarksville	12	77	2	10	53	2
Genesee	2	3	1	0	0	0
Miscellaneous	0	0	0	2	0	2
Total	34	193	3	35	162	7

BRADFORD FIELD.

Division of Field.	April, 1886. Wells.	Prod'n.	Dry.	March, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	12	70	0	13	70	1
Kendall Creek	5	42	0	4	36	0
Foster Brook	7	39	0	6	38	0
Knapp's Creek	7	43	1	10	44	0
Four Mile	4	31	0	3	26	0
Indian & Meeks Creeks	8	64	0	3	27	0
Cole Creek	5	78	0	7	113	0
Kinzua	1	15	0	3	35	0
Miscellaneous	3	0	3	2	0	2
Total	52	382	4	51	389	3

WARREN AND FOREST.

District.	April, 1886. Wells.	Prod n.	Dry.	March, 1886. Wells.	Prod'n.	Dry.
Glade	10	43	3	13	56	5
Clarendon	23	116	3	18	108	0
Tiona	26	164	0	23	147	1
Cooper	4	30	1	4	25	1
Balltown	8	106	3	7	175	0
Kane	47	2865	2	17	1650	1
Grand Valley, Etc	22	247	5	16	140	4
Total	140	3571	17	98	2301	12

LOWER COUNTRY.

District.	April, 1886. Wells.	Prod'n.	Dry.	March, 1886. Wells.	Prod'n.	Dry.
Venango	51	620	15	48	1016	12
Clarion	24	176	7	30	409	6
Butler and Armstrong	34	955	6	20	504	6
Washington	6	2640	0	9	378	2
Miscellaneous	12	245	6	5	47	2
Total	127	4636	34	112	2353	28

GRAND SUMMARY.

District.	April, 1886. Wells.	Prod'n.	Dry.	March, 1886. Wells.	Prod'n.	Dry.
Allegany	34	193	3	35	162	8
Bradford	52	382	4	51	389	3
Warren and Forest	140	3571	17	98	2301	12
Lower Field	127	4636	34	112	2353	28
Total April	353	8782	58	296	5205	50
Total March	296	5205	50			
Increase	57	3577	8			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	April 30, 1886. New Rigs	Old Rigs	Drilling	Total	March 31, 1886. New Rigs	Old Rigs	Drilling	Total
Scio	0	4	1	5	0	4	2	6
Alma	5	12	5	22	4	11	8	23
Wirt	7	7	11	25	12	2	12	26
Bolivar	1	4	2	7	1	5	2	8
Genesee	0	11	2	13	1	11	3	15
Clarksville	8	6	12	26	14	5	11	30
Miscellaneous	1	0	1	2	1	0	1	2
Total	22	44	34	100	33	38	39	110

BRADFORD FIELD.

Division of Field.	April 30, 1886. New Rigs	Old Rigs	Drilling	Total	March 31, 1886. New Rigs	Old Rigs	Drilling	Total
E. and W. Branches	6	15	11	32	7	15	19	32
Kendall Creek	3	1	1	5	2	1	3	6
Knapp's Creek	4	6	8	18	9	3	8	20
Foster Brook	5	3	6	14	6	4	6	16
Four Mile	1	3	2	6	3	3	5	11
Indian Creek	7	5	8	20	5	3	7	15
Cole Creek	2	4	4	10	2	4	5	11
Kinzua	2	0	3	5	2	0	2	4
Miscellaneous	0	0	5	5	4	0	3	7
Total	30	37	48	115	40	33	49	122

WARREN AND FOREST.

Division of Field.	April 30, 1886. New Rigs	Old Rigs	Drilling	Total	March 31, 1886. New Rigs	Old Rigs	Drilling	Total
Glade	2	4	5	11	6	3	7	16
Clarendon	14	2	15	31	19	1	16	36
Tiona	25	7	17	49	30	3	24	57
Cooper	1	2	1	4	1	2	2	5
Balltown	1	1	4	6	3	0	8	11
Kane	29	3	62	94	24	5	65	94
Grand Valley, Etc	24	1	21	46	14	2	15	31
Total	96	20	125	241	97	16	137	250

LOWER COUNTRY.

Division of Field.	April 30, 1886 New Rigs	Old Rigs	Drilling	Total	March 31, 1886. New Rigs	Old Rigs	Drilling	Total
Venango	33	13	35	81	34	12	39	85
Clarion	15	8	18	41	20	5	25	50
Butler & Armstrong	24	8	29	61	20	9	48	77
Washington	13	9	50	72	7	7	52	66
Miscellaneous	14	1	17	32	12	2	24	38
Total	99	39	149	287	93	35	188	316

GRAND SUMMARY.

Field.	April 30, 1886. New Rigs	Old Rigs	Drilling	Total	March 31, 1886. New Rigs	Old Rigs	Drilling	Total
Allegany	32	44	34	100	33	38	39	110
Bradford	30	37	48	115	40	33	49	122
Warren and Forest	96	20	125	241	97	16	137	250
Lower Country	99	39	149	287	93	35	188	316
Total	247	140	356	743	263	122	413	798
Total Mar. 31	263	122	413	798				
Difference	16	18	57	55				

SUMMARY of the Statements of the National Transit Company for April and March.

	April Barrels.	March. Barrels.
Receipts from all sources	1,656,873.95	1,653,755.25
Deliveries	1,824,561.17	1,809,622 22
Gross stocks end of month	34,436,708.69	34,309,468.61
Sediment and surplus	3,307,177.65	3,001,637.52
Total liabilities end of month	31,129,531.04	31,307,831 09
Outstanding acceptances	25,679,037.53	26,686,037,53
Credit balances	5,450,493.51	4,621,793 56

April Production Report.

Reports of the stocks on hand at 6535 Bradford wells showed an average decrease of one and eight-tenths barrels to the well during April:

Time.	No. Wells.	Gross Stocks.	Average per well.
May 1, 1886	6,535	329,417	50.4
April 1, 1886	6,508	316,675	48.6
Difference	27	12,742	1.8

The number of wells in the Bradford field connected with the pipe lines on the first of May is estimated at 13,890. Estimating the entire Bradford region on the basis of one and eighth-tenths barrels decrease, the total decrease in stocks at wells during April was 25,002 barrels, a daily average of 833 barrels. Subtracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for April is as follows:

	Barrels
Average Daily Pipe Line Runs	28,640
Average Daily Decrease of Stocks at Wells	833
Bradford's April Production, estimated	27,807
" March " "	27,947
Average Daily Decrease	140

THE ALLEGANY FIELD.

The Stock reports of the Allegany field are summarized as follows:

Date.	No. Wells.	Gross Stocks.	Average per well
May 1, 1886	1,035	36,372	35.1
April 1, 1886	1,035	33,603	32.4
Difference	00	2,769	2.7

The wells from which reports were received had an average decrease of two and seven-tenth barrels to the well during April. With 4090 wells in the field on the first of May, these figures give a total decrease for the field of 11,043 barrels, or an average decrease of 368 barrels. Subtracting this decrease from the average daily pipe line runs 6895, the remainder, 6527, will represent Allegany's daily production during April. The March average was 6137 barrels.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Apr. 1.	No. Wells May 1.	Average per well Apr. 1.	Average per well May 1.
Clarendon and Tiona	227	232	29	24
Cherry Grove	22	22	43	45
Cooper District	150	150	44	40
Thorn Creek	35	35	139	125
Lower Country	92	90	59	60
Miscellaneous	153	155	97	122

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for April and March is as follows:

Field.	April. Barrels.	March. Barrels.
Bradford	27,807	27,947
Allegany	6,527	6,137
Outside Runs	28,693	25,680
Total	63,027	59,764

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, had a daily average production of 2401 barrels in April and 2186 barrels in March.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18.330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63,876	67,981
November	31,789	35,026	8.642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60,627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32.378	7,196	11,607	19.800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55.505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10.384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63 876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,585	27,051	6.651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59,764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649

It will be seen in the above that while Bradford's production more than holds its own with last year's figures, Allegany has fallen behind at the rate of 642 barrels a day, the outside runs are increased 5626 barrels, and that the total production of the New York and Pennsylvania oil regions for April, 1886, is 5378 barrels in advance of April, 1885.

The Refined Market.

The refined market remained without special features during April. Seven and a quarter cents per gallon for 70 degree Abel test, has been the ruling figure, which was marked up one-eighth, whenever the crude market showed any signs of strengthening. Philadelphia and Baltimore quotations have been from ⅛c to ¼c below New York prices, but towards the end of the month these two ports advanced their quotations to the same figure. The abolition of rolling charges makes the price virtually the same as before the change.

The exports continue large, but Europeans are still indisposed to buy more than they actually need and are not anxious to lay up any stock for future demand. The dullness of the crude market is not without its depressing effect upon refined. The arrival of the Crusader, with 177,400 gallons of refined oil in tanks, on the other side of the ocean, marks a new era in the problem of cheap transportation of petroleum across the Atlantic. The average daily exports during the first quarter of 1886 were 42,156 barrels against 35,590 barrels in the same period in 1885, 30,837 barrels in 1884 and 32,631 barrels in 1883. Stocks in Europe, April 3, 1886, were 911,972 barrels, while a year previous they were represented by 1,069,004 barrels.

Refined oil for the home trade is in fair demand. Quotations are 7⅜ to 8⅞c. for 110° test, 8 to 9¼c. for 120° test, 8½ to 9⅛c. for 130° test, 9c. for N. Y. State test and 9¾ to 10c. for 150° test, water white. Naphtha remains firm at 8¼c. for prime city. Refined in cases is in moderate demand at quotations of 8⅝ to 9⅜c., according to brand. The clearances for April in this class of goods to China and the East amounts to 1,342,478 cases, an increase of 760,061 cases over the same month in 1885. The total clearances up to April 30th are 5,100,608 cases, an increase of 1,736,624 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 30th of April, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	1,695,588	776,745
JAPAN	731,123	648,639
INDIA	1,326,334	1,296,456
JAVA, SINGAPORE, ETC.	1,347,563	642,154
Total April 30	5,100,608	3,363,984
Total March 31	3,758,130	2,781,567
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	5,100,608	3,363,984

REFINED QUOTATIONS FOR APRIL.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	7¼	7⅛	7¼	6	6.55	16¼
2	7¼	7⅛	7¼	6	6 50	16⅛
3	7¼	7⅛	7¼	6	6.50	16⅛
4						
5	7¼	7⅛	7⅛	6	6.50	16
6	7⅜	7¼	7¼	6	6.50	16⅛
7	7⅜	7¼	7⅛	6	6.45	16⅛
8	7⅜	7¼	7⅛	6	6.45	16⅛
9	7⅜	7⅛	7⅛	6	6.45	16⅛
10	7⅜	7⅛	7⅛	6	6.45	16⅛
11						
12	7⅜	7¼	7¼	6	6.50	16½
13	7⅜	7¼	7¼	6	6.50	16½
14	7½	7⅜	7⅜	6	6.50	16⅜
15	7½	7⅜	7⅜	6	6.50	16½
16	7⅜	7⅜	7⅜	6	6.50	16⅜
17	7⅜	7⅜	7⅜	6	6.45	16⅜
18						
19	7⅜	7⅜	7⅜	6	6.50	16⅝
20	7⅜	7¼	7¼	6	6.50	16½
21	7⅜	7¼	7¼	6	6.50	16½
22	7⅜	7¼	7¼	6	6.50	16⅜
23 Good Fr day						
24	7⅜	7¼	7¼	6	6.50	16⅜
25						
26	7¼	7¼	7¼	6	6.50	16⅜
27	7¼	7¼	7¼	6	6.50	16⅜
28	7¼	7¼	7¼	6	6.40	16⅜
29	7¼	7¼	7¼	6	6.45	16⅜
30	7¼	7¼	7¼	6	6.45	16⅜

THE Bridgewater Gas Company finished a 175-pound gas well, on the Irons farm, Woodlawn, May 4th, at a depth of 1378 feet. The company is extending its line from Beaver to Van Port, two miles below.

THE company at Connellsville, Pa., drilling for natural gas, has decided to drill to a depth of 3000 feet. The present depth is 2568 feet, and so far the prospects for striking natural gas have been poor.

THE gas well west of Uniontown has some gas at 2404 feet, but not sufficient to be piped. Another well will be drilled near the No. 1.

THE Gill well in Steubenville, Ohio, has been abandoned and a new well is to be sunk three miles west of the city.

NATURAL gas has been struck at Cerro Gordo, Illinois, at a depth of 125 feet.

OPPERMAN'S Middle Field pocket maps for sale at AGE office.

POCKET maps of Warren county on sale at AGE office.

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, MARCH, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., APRIL 13, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS		ILLUMINATING.		LUBRICATING & PARAFINE OILS		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	--------	---	1,500	200	612,699	64,059	13,217	3,489	----	------	627,416	67,748
New York, N. Y	3,645,588	270,840	563,572	53,182	26,929,071	2,338,827	1,046,508	210,856	3,150	295	32,187,889	2,874,000
Philadelphia, Pa	2,286,827	149,631	228,640	18,446	8,786,181	659,194	35,004	5,102	------	-----	11,336,652	832,373
Baltimore, Md	--------	-------	--------	-------	653,326	50,273	--------	-------	-------	------	653,326	50,273
San Francisco, Cal	----	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	--------
All other districts	----	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	--------
Total for March, 1886	5,932 415	420,471	793,712	71,828	36,981,277	3,112,353	1,094,729	219,447	3,150	295	44,805,283	3,824,394
Total for March, 1885	4,299,431	319,099	636,781	49,795	33,920,565	2,935,398	1,018,759	201,714	791,112	48,790	40,666,648	3,554,706
Total for 9 months ending Mar. 31. 1886	62,389,421	4,653,767	10,201,532	803,840	342,170,881	30,150,837	8,857,813	1,790,398	2,553,474	150,681	426,173,121	37,549,523
Total for 9 months ending Mar. 31, 1885	63,030,921	4,575,473	11,968,635	971,983	338,051,981	29,549,782	9,202,530	1 888,812	4,245,948	238,665	426,500,015	37,224,7[illegible]5

CRUDE QUOTATIONS FOR APRIL, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
T 1	72⅝	72⅞	71⅜	71⅝	72⅜	73	71½	71½	72½	73	71⅜	71½	72¾	73	71⅜	71½
F 2	71¼	72	71¼	71⅝	71½	72⅛	71¼	71¾	71¼	72	71¼	71½	71½	72	71⅝	71⅝
S 3	71¾	72⅛	71⅝	72	71⅞	72¾	71⅝	72⅛	71½	72⅛	71½	72	71¾	72¼	71⅝	72¼
M 5	72⅛	73½	71¾	73⅜	72	73⅝	71¾	73⅜	72¼	73⅝	71¾	73¼	72¼	73½	71¾	73⅜
T 6	73⅝	73¾	72½	72⅝	73¾	73¾	72⅝	72⅝	73¼	73⅞	72½	72¾	73½	73¾	72½	72⅝
W 7	72¾	73	72⅛	72⅝	72⅞	73	72¼	72⅝	72¾	73	72⅛	72⅝	72⅞	72⅞	72¼	72⅜
T 8	72⅝	73	72½	72¾	72¾	73	72½	72⅞	72⅝	73	72⅜	72⅞	72⅝	73	72½	72¾
F 9	72¾	73	72½	72⅞	72¾	73⅛	72½	73	73	73	72½	73	72⅞	73	72⅝	73
S 10	73	73½	73	73⅜	73	73½	72⅞	73½	73	73⅝	72¾	73½	72⅞	73¼	72⅞	73⅜
M 12	73⅝	78⅜	73⅜	77	74	78⅜	74	77	74	78⅜	74	76⅞	74⅜	78¼	74⅜	77
T 13	77⅛	77⅜	75⅜	75⅞	77¼	77¼	75¼	75⅞	77	77⅜	75¼	75⅞	77¼	77⅜	75¼	75⅞
W 14	76¼	77⅜	75¾	76¾	76½	77½	75¾	76⅞	75¾	77½	75¾	76¾	76⅛	77½	75¾	76¾
T 15	76⅞	77	75⅜	75¾	77⅛	77¼	75⅜	75¾	77	77	75⅜	75⅞	77	77	75⅜	75⅞
F 16	75⅝	75¾	75⅛	75⅜	75	75⅞	75	75⅜	75½	75⅞	75	75⅜	75¼	75¾	75⅛	75⅜
S 17	75⅝	77⅝	75⅝	77¼	75¾	77⅝	75¾	77¼	75⅝	77½	75⅝	77⅛	75¾	77⅝	75¾	77¾
M 19	77½	77⅞	75¾	76⅛	77¾	78⅛	75⅞	76	77⅜	78	76	76¼	77⅞	78⅜	75⅞	76
T 20	75⅝	76¾	75⅜	76⅝	75¾	76⅞	75⅝	76⅝	75⅞	76¾	75¾	76⅝	75¾	76¾	75¾	76⅝
W 21	76⅝	76¾	76	76⅛	76	76⅞	76	76⅛	76⅝	76¾	76	76⅛	76¼	76¾	76⅛	76¼
T 22	75⅞	76½	75¾	76¼	75⅞	76½	75⅝	76⅛	76	76½	75¾	76¼	75¾	76⅜	75¾	76¼
F 23 Holiday.																
S 24	75	75	71¾	72¼	74¾	74¾	71¾	72⅛	75½	75½	71⅞	72⅜	75	75	71¾	72⅛
M 26	71¾	72⅜	71	72½	71½	72¾	70⅞	72⅝	71	72¾	70⅞	72⅝	71	72¾	70⅞	72¾
T 27	72⅝	73⅜	71⅞	72⅞	72¾	73½	71¾	73	72¾	73½	71⅝	72⅞	73½	73⅝	71⅞	73
W 28	73½	73¾	72	73	73⅞	74	72¾	72⅞	73⅝	73¾	72¾	72⅞	73½	73¾	72⅞	72⅞
T 29	72¾	73⅛	72⅛	72¼	72⅝	73¼	72⅛	72⅛	72¾	73¼	72¼	72¼	72¾	73¼	72¼	72¼
F 30	72¼	73⅝	72¼	73½	72	73¾	72	73⅜	72⅜	73⅞	72¼	73⅜	72½	73¾	72½	73⅜

The Macksburg Field in April.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2186
April	64,137	7890	2401

On the first of April there were 373 producing wells in the Macksburg field, and 19 more were completed during the month, making a total of 382 wells for May 1st, with an average daily production of 6¼ barrels apiece. Three dry holes were drilled to the deep sand since our last report, and two to the 800 foot or shallow sand. The dry deep wells were located, one a little southeast of Elba, one at the head of Goose Run to the northeast, and the third on Engine Run, west of Macksburg. The shallow dusters were likewise in the vicinity of Engine Run. The Marietta gas well, on the Cherry farm, found the Macksburg formation at 1700 feet, or so much of it as the black shale and cap, with no sand. The well was drilled 300 feet deeper, making it about 2000 feet in depth. No sand being found, the casing was pulled on May 6th, and the well abandoned.

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for April, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of April		1,304,334.87
Quantity of crude petroleum at close of Apr.	1,456,335.04	
Less sediment and surplus	165,251.19	
		1,291,083.85
Receipts during April		187,222.02
Deliveries during April—to refiners	197,205.28	
" " " to other parties	-------	197,205.28
Outstanding certificates, accepted orders, etc.		764,000.00
Credit balances		527,083.85
Total liabilities April 30, 1886		1,291,088.85

MARCH SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of March		1,310,872.28
Quantity of crude petroleum at close of Mar.	1,454,858.38	
Less sediment and surplus	150,523.51	
		1,304,334.87
Receipts during March		193,764.56
Deliveries during March—to refiners	197,270 32	
" " to other parties	--------	197,270.32
Outstanding certificates, accepted orders, etc.		773,000 00
Credit balances		531,334.87
Total liabilities, March 31, 1886		1,304,334.87

AVERAGE DAILY RUNS BY DISTRICTS, INCLUDING MACKSBURG—1882-86.

	Bradford	Allegany	Cherry Grove	Cooper	Baltown	Wardwell	Bathbridge	Cogley	Macksburg	Kane	Washington	All Other Fields	Total
1882.													
January	55,006	7,222	----	----	----	----	----	----	----	----	----	11,541	73,769
February	63,313	9,512	----	----	----	----	----	----	----	----	----	10,722	83,547
March	58,078	14,760	----	----	----	----	----	----	----	----	----	10,894	83,732
April	53,108	17,622	----	----	----	----	----	----	----	----	----	10,395	81,125
May	55,955	19,522	218	----	----	----	----	----	----	----	----	11,262	86,957
June	56,016	22,765	3,037	----	----	----	----	----	----	----	----	13,968	95,786
July	52,456	23,884	8,655	----	----	----	----	----	----	----	----	19,311	104,306
August	49,711	20,814	24,315	----	----	----	----	----	----	----	----	10,985	105,825
Septem	46,585	16,387	21,002	----	----	----	----	----	----	----	----	10,567	96,541
October	42,107	19,964	9,363	120	----	----	----	----	----	----	----	14,286	85,840
Novem	41,404	16,993	4,886	294	----	----	----	----	----	----	----	10,012	74,589
Decem	39,580	14,020	3,180	558	87	----	----	----	----	----	----	14,993	72,419
1883.													
January	36,487	14,106	3,313	1,632	334	----	----	----	----	----	----	8,893	65,125
February	38,481	13,154	2,954	1,475	332	----	----	----	----	----	----	8,812	65,208
March	37,754	12,619	2,706	1,737	368	----	----	----	----	----	----	9,220	64,404
April	38,810	13,742	2,604	3,802	840	----	----	----	----	----	----	9,409	69,207
May	39,039	13,793	,2207	3,829	952	----	----	----	----	----	----	9,625	69,445
June	38,614	13,499	2,215	4,199	1,961	----	----	----	----	----	----	9,955	70,443
July	36,489	12,381	1,891	3,467	1,944	----	----	----	----	----	----	9 456	65,628
August	37,165	12,743	1,935	3,166	3,078	----	----	----	----	----	----	10,790	68,877
Septem	35,894	12,358	1,612	3,200	3,723	----	----	----	----	----	----	9 423	66,210
October	35,654	12,757	1,312	3,314	4 298	----	----	----	----	----	----	10,314	67,649
Novem	34,516	12,332	1,000	3,251	3,807	----	----	----	----	----	----	10,285	65,281
Decem	32,650	11,752	1.061	2,876	3,766	----	----	----	----	----	----	10,725	62,830
1884.													
January	31,020	11,018	767	2,908	2,808	----	----	----	86	----	----	9,657	58,264
February	33,987	12,025	968	3,743	2,816	----	----	----	51	----	----	11,[illegible]34	64,624
March	33,049	11,777	1.001	4,631	2,813	---		----	86	----	----	11,319	64,676
April	34,370	12,261	1,039	4,229	2,399	475	844	----	113	----	----	10,176	65,906
May	34,946	12,193	968	3 468	2,260	1,015	1,061	----	136	----	----	10,777	66,824
June	35,701	11,672	845	2,985	2,250	2,042	969	----	211	----	----	10,886	67,561
July	34,718	11,114	523	2,476	2,471	4,277	889	----	249	----	----	10,234	66,951
August	33,782	10,384	66[illegible]	2,046	2,189	6,483	843	----	258	----	----	10,6[illegible]4	67,254
Septem	33,449	9,989	653	2,155	2,115	4,056	2,644	----	334	----	----	10,891	66,286
October	31,500	8,802	446	1,811	1,781	2,201	6,034	----	350	----	----	10,489	63,414
Novem	29,552	8,642	423	1,302	1,401	1,346	9,493	----	431	----	----	9,592	62,182
Decem	30,632	8,193	407	1,246	1,189	979	8,730	----	315	----	----	10,367	62,058
1885.													
January	27,254	7,442	360	1.214	810	977	6,199	----	384	----	----	9,034	53,674
February	27,480	7,696	327	987	910	663	7,349	----	637	----	----	9,564	55,613
March	26,833	7,342	37[illegible]	867	954	605	7,239	----	873	----	----	9,[illegible]85	54,971
April	29,557	7,738	299	1,114	775	527	9,333	----	1,189	----	----	11,019	61,551
May	28,443	7,467	343	1,053	902	722	7,488	127	1,557	----	----	10,879	58,981
June	30,662	7,680	439	1,000	1,044	764	5,905	609	2,233	----	----	11,983	62,319
July	30,657	7,363	467	906	1,032	647	3,856	1 220	2 441	----	----	10,283	59,872
August	29,291	7,102	363	923	930	----	2,[illegible]68	2,115	2,382	----	----	12,731	58 105
Septem	30,151	6,647	312	918	944	----	2,[illegible]21	3,244	2,270	----	----	13,8[illegible]0	60,337
October	30,828	7,[illegible]81	428	777	925	----	1,898	4,9[illegible]9	2,053	----	----	14,194	63,123
Novem	29,117	6,667	303	707	1,030	----	1,469	5,416	2,031	----	----	14,162	60,902
Decem	30,376	6,738	442	749	1,182	----	1,420	5,241	1,971	96	----	14,[illegible]54	63,269
1886.													
January	27,966	6,235	306	623	1,063	----	1,288	4,469	1,768	70	----	14,398	58,186
February	27,499	6,361	305	571	1,056	----	1,218	3,969	1,775	435	497	14,552	58,238
March	29,333	6,545	353	653	1,059	----	1,369	3,847	1,897	1,252	900	16,247	63,455
April	28,640	6,895	347	583	832	----	1,299	3,618	2,138	3,017	1,734	17,263	66,366

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	APRIL, 1886.	MARCH, 1886.
National Transit Co	1,656,873.95	1,635,755 25
Tidewater	187,322.02	193,764.56
Octave Oil Co	3,070.51	3,390.32
Shaffer Run	500.00	184.00
Franklin (limited)	6,031.58	8,540.34
Pittsburgh Pipe Line	21,032.07	20,782.54
Southwest Pennsylvania	52,019.15	27,897.29
Total	1,926,849.28	1,908,314.30
Daily average	64,228.31	61,558.53

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	APRIL, 1886	MARCH, 1886.
National Transit Co	1,824,5[illegible]1.17	1,809,622.22
Tidewater	197,205.28	197,270.32
Octave Oil Co	2,187.28	3,390.32
Shaffer Run	168.28	205.73
Franklin (limited)	1,735.8[illegible]	3,029.62
Pittsburgh Pipe Line	21 032 07	20,782.54
Southwest Pennsylvania	26,935.29	15,429.57
Total	2,073,825.23	2,049,730.32
Daily average shipments	69,127.51	66,120.33

In the above shipments only the oil delivered to refiners is included.

Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August	11,099.01
Daily excess of shipments over runs, July	5,959.01
Daily excess of shipments over runs, June	7,992.05
Daily excess of shipments over runs, May, 1885	10,502.60

NET STOCKS.

PIPE LINE.	APRIL 30, 1886.	MARCH 31, 1886.
National Transit Co	31,129,531.04	31,307,831.09
Tidewater	1,291,083.85	1,304,334.87
Octave Oil Co	4,373 51	4,449,64
Shaffer Run	21,226 14	22,828.87
Franklin (limited)	43,191.33	38,895.61
Pittsburgh Pipe Line	-------	------
Southwest Pennsylvania	55,518.51	31,219.91
Total	32,544,924.38	32,710,559.99

Stocks decreased April	165,635.61
Stocks decreased March	137,174 57
Stocks decreased February	436,146 69
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,18[illegible].52
Stocks decreased October	184,393 91
Stocks decreased September	408,862.12
Stocks decreased August	390,529 99
Stocks decreased July	215,947.71
Stocks decreased June	356,849 49
Stocks decreased May	565,252.48
Stocks decreased April, 1885	42,525.72

	RECEIPTS.	DELIVERIES.
Daily average April	64,228	69,127
Daily average March	61,558	68,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,134
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,90[illegible]	67,893
Daily average May	57 135	67,637
Daily average April, 1885	60,362	60,856

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARRISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) and arriving at Olean at 10:54 a. m. Connects at Olean for Bradford.

Train leaves Buffalo at 2:40 p. m. (except Sunday) arriving at Olean at 5:05 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:30 p. m. (daily) arrives at Olean at 8:10 p. m.

Train for Buffalo leaves Olean at 5:50 (daily) and 10:44 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:10 p. m.

Afternoon train leaves Olean at 4:02 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				Nov. 29, 1885.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun.
A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.
------	------	6 17	10 20	Ar. Richburg Lv	6 24	------	2 57	------
------	------	6 10	10 14	" Bolivar "	6 30	------	3 03	------
11 00	6 00	3 55	9 10	" Olean "	7 30	11 00	5 10	3 30
9 15	4 15	2 15	7 25	Lv. Bradford Ar	9 10	12 45	6 55	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 20	3 05	8 30	Ar. .....Eldred ..... Lv.	7 10	11 35	3 35
5 00	2 38	8 12	" ....Duke Centre... "	7 28	11 53	4 01
4 05	1 20	7 15	" .....Tarport..... "	8 25	12 50	5 25
4 00	1 10	7 10	Lv. .....Bradford..... Ar.	8 30	12 55	5 35
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			Nov. 29, 1885.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	1 00	9 40	Lv.....Kinzua.....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren .....Ar	------	11 50	6 19
5 15	------	8 50	" ..... Irvineton ..... "	------	12 05	7 05
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	------	8 45	Lv.....Pittsburgh.....Ar	------	8 25	7 40
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

March 1, 1886—Eastern Time.

STATIONS.					
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
------	8 20	10 45	Ar. .....Buffalo.....Lv	8 20	5 10	------
10 00	------	------	" .....Rochester ..... "	------	------	7 00
------	------	------	" .....Salamanca ..... "	------	------	------
		A. M.				
4 35	4 35	7 30	Lv.....Bradford..... Ar	12 18	8 30	12 18
		P. M.		P. M.		
------	------	12 35	Lv..... do .....Ar	3 05	------	------
------	------	3 22	" ..... Ridgway..... "	12 20	------	------
------	------	4 44	" .....Falls Creek..... "	10 33	------	------
------	------	4 50	" ..... Dubois ..... "	1 27	------	------
				A. M.		
------	------	5 50	Ar .....Punxsutawney..Lv	9 15	------	------

☞Thousand Mile Tickets sold at Two Cents per mile.☜

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Sup't. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one-half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	b	b		b	a	b
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
5 25	12 55	9 05	Ar..... Bradford.....Lv	7 35	3 55	10 30
4 40	12 10	8 20	Lv... Kinzua Junction... "	8 20	4 40	11 25
4 30	11 20	8 10	" ..... Aiken ..... "	8 33	4 53	12 25
4 16	11 00	7 56	" .....Simpson..... "	8 49	5 09	12 45
3 35	10 00	7 15	" .....Smethport ..... "	9 30	5 50	1 45
4 30	12 01	8 10	" .....Rew City..... "	8 29	4 49	11 40
4 05	11 37	------	" ..... Rixford..... "	8 45	5 05	12 26
4 00	11 32	------	" .....Duke Centre..... "	8 49	5 09	12 35
3 43	11 15	------	" .....Eldred ..... "	9 07	5 27	1 00
3 26	10 58	------	" .....Bullis Mills..... "	9 24	5 44	1 37
3 11	10 43	------	" .....Ceres..... "	9 40	6 00	1 55
2 57	10 29	------	" .... Little Genesee..... "	9 54	6 14	2 15
2 48	10 20	------	Lv.....Bolivar ..... Ar			2 30
			Ar..... Bolivar Lv	10 03	6 23	2 48
2 23	9 53	------	Lv..... Allentown ....., "	10 27	6 47	3 25
P. M.	A. M.	-		A. M.	P. M.	P. M.
1 50	9 20	------	Lv..... Wellsville..... Ar	11 00	7 20	4 10
			N. Y., L. E. & W. R. R.			
12 40	7 50	------	Ar.....Hornellsville Lv	12 00	8 20	7 45
				P. M.		
------	6 26	------	" .....Corning..... "	1 25	9 51	------
------	5 48	------	" .....Elmira..... "	1 55	10 25	------
------	5 12	------	" .....Waverly ..... "	2 22	10 36	------
------	4 36	------	" .....Owego ..... "	2 53	11 31	------
					A. M.	
------	3 53	------	" .....Binghamton..... "	3 31	12 11	------
------	8 00	------	Lv.....New York.....Ar	10 20	7 30	------
	P. M.			P. M	A. M.	

Sunday train leave Wellsville at 7.30 a. m., Bolivar at 8.28, Ceres at 8.51, Eldred at 9.24, Duke Centre at 9.42, Rixford at 9.47, Rew City 10.06, Smethport 9.10, Simpson 9.51, Aiken 10.05, arriving at Bradford at 11 a. m.

Additional train leaves Wellsville daily, except Sunday, at 5.25 p. m., arriving at Allentown at 5.45, and Bolivar at 6.15 p. m.

Additional train leaves Bolivar daily, except Sunday, at 10.30 a. m., arriving at Eldred at 11.50 a. m. and Bradford at 3.45 p. m.

Tickets for sale at 132 Main street and at the Union depot.

a—Runs daily. b—Runs daily except Sunday.

JOHN C. McKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect Jan. 18, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo Lv	7 45a. m.	12 30p.m.	5 00p.m.	.....
Oak Harbor.....Ar	8 43	1 22	5 55	.....
Fremont.....	9 07	1 47	6 18	.....
Clyde	9 23	2 03	6 33	.....
Bellevue.....	9 38	2 18	6 47	.....
Monroeville..... Lv	9 57	2 32	7 03	1 35a. m.
Norwalk.....	10 13	3 00	7 20	1 50
Wellington	11 03	3 52	9 00	2 32
Creston.....Ar	11 52	4 40	10 45	3 15
Orrville .....Ar	12 20p.m.	5 10	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 10	6 00a. m.	6 00
Massillon.....Ar	1 20	5 50	6 40	6 40
Massillon.....Lv	1 20	5 50	6 40	6 40
Bowerstown.....Ar	3 05p.m.	7 45p.m.	9 10a, m.	9 10a.m.
Canal Dover.....	2 38p.m.	.....	8 00a. m.	8 00 a.m.
Newcomerstown	3 27	.....	8 47	8 47
Cambridge.....	4 30	.....	9 45	9 45
Macksburg	6 10	.....	11 38	11 38
Marietta ... .Ar	7 20p m.	.....	12 50p.m.	12 50p.m.

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta Lv	6 20a. m.	2 30p.m.	.....	.....
Macksburg.....	7 25	3 42	.....	.....
Cambridge.	8 54	5 20	.....	.....
Newcomer-town	9 48	6 20	.....	.....
Canal Dover.....	10 28 a.m.	6 55p.m.	.....	.....
Bowerstown.....	9 45 a m.	4 00p.m.	6 20 a.m.	.....
Massillon.....	12 30p.m.	8 35	8 12	.....
Orrville.....Ar	1 10	9 15	8 50	.....
Orrville.....Lv	1 25	10 15*	8 50	.....
Creston Lv	1 57	10 45	9 22	.....
Wellington	2 45	11 28	10 10	*
Norwalk.....	3 35	12 10	11 25	7 25a. m.
Monroeville.....	3 47	12 25a. m.	11 37	7 37
Bellevue	4 04	*	11 55	7 53
Clyde	4 18	.....	12 10p.m.	8 08
Fremont.....	4 35	.....	12 30	8 25
Oak Harbor.....	4 58	.....	12 55	8 48
Toledo.....Ar	5 55p.m.	.....	1 55p.m.	9 45a. m.

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
6 00p.m.	11 40a.m.	Ar.....Huron.....Lv	6 25a. m.	2 15p.m.
5 15p.m.	10 45a.m.	Lv.....Norwalk.....Ar	7 15a. m.	3 10p.m.

* Daily.

This road is now open through from Toledo to Bowerstown, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE—Between Toledo, Cambridge and Marietta; Toledo and Bowerstown; Toledo and Akron, Youngstown and Pittsburgh; Chicago, Akron, Youngstown and Pittsburgh.

M. D. WOODFORD, General Manager. JAMES M. HALL, Gen'l. Pass. Agent.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JAN. 4th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
		P. M.	A. M.	A. M.	A. M.
Bradford ..... Lv.	.....	.....	.....	5 45	11 30
Mt. Jewett ..... Lv.	.....	5 00	.....	7 40	1 05
Kane	.....	5 40	.....	10 30	1 47
Sheffield Junction	.....	.....	.....	11 26	2 46
Marienville	.....	.....	.....	12 12	3 29
Tylersburg	.....	.....	.....	12 55	4 10
Clarion Junction	.....	.....	7 00	1 40	4 48
Clarion	—	.....	6 30	1 15	4 25
Shippenville	23	.....	7 12	1 53	4 58
Knox	—	.....	7 32	2 10	5 12
St. Petersburg	A. M.	.....	8 20	2 54	5 48
Foxburg	5 40	.....	8 50	3 22	5 55
Parker	5 50	.....	9 00	3 35	.....
Bruin	6 08	P. M.	9 20	3 55	P. M.
Petrolia	6 18	—	9 32	4 10	—
Karns	6 22	27	9 38	4 15	9
Millerstown	6 36	—	9 55	4 30	—
St. Joe	6 50	A. M.	10 08	4 48	P. M.
Butler	7 20	8 45	10 40	5 25	1 55
Renfrew	7 41	8 58	11 00	5 43	2 11
Callery Junction	8 06	9 20	11 30	6 10	2 40
Allegheny ..... Ar.	10 30	10 30	12 40	7 20	3 58
	A. M.	A. M.	P. M.	A. M.	P. M.

NORTHBOUND TRAINS

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A. M.	P. M	P. M.
Allegheny ..... Lv.	6 00	9 20	6 55	1 15	5 35
Callery Junction	7 30	10 40	8 30	2 40	6 50
Renfrew	7 58	11 00	8 58	3 04	7 12
Butler	8 20	11 20	9 15	3 25	7 30
St. Joe	.....	.....	9 40	4 07	8 00
Millerstown	.....	A. M.	9 55	4 30	8 14
Karns	.....	—	10 12	4 46	8 28
Petrolia	.....	20	10 16	4 50	8 32
Bruin	.....	—	10 32	5 06	8 43
Parker	.....	A. M.	10 51	5 28	9 00
Foxburg	.....	5 30	11 25	6 00	9 10
St. Petersburg	.....	5 43	11 40	6 17	.....
Knox	.....	6 25	12 25	7 00	.....
Shippenville	.....	6 42	12 40	7 18	.....
Clarion Junction	.....	7 00	12 55	7 30	P. M.
Clarion	.....	6 30	.....	8 00	—
Tylersburg	.....	7 34	1 30	.....	22
Marienville	.....	8 10	2 07	.....	—
Sheffield Junction	.....	8 50	2 46	.....	A. M.
Kane	.....	9 .0	3 35	.....	6 30
Mt. Jewett ..... Ar.	.....	12 40	4 40	.....	7 10
Bradford ..... Ar.	.....	2 50	5 50	.....	9 28
		P. M.	P. M.	P. M.	A. M.

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.10 a. m., New Castle Accommodation 2.50 p. m., Chicago Express, with through Sleeping Car, 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAIN leaves Foxburg at 6.40 a. m., Petrolia 7.18, Millerstown 7.36, Butler 8.20, Renfrew 8.41, arrives at Allegheny 10.30 a. m.; (same train connects at Callery Junction for New Castle and intermediate points). Returning, leaves Allegheny at 3.30 p. m., Renfrew 6.43, Butler 7.04, Millerstown 7.45, Petrolia 8.04 arrives at Foxburg 8.45 p. m. Train from New Castle and intermediate points connects with this train at Callery Junction. Additional Sunday Train leaves Allegheny at 7.55 a. m., arrives at Butler 10.15 a. m. Returning, leaves Butler at 5.25 p. m., arrives at Allegheny 7.20 p. m.

THOS. M. KING, General Manager.

C. W. BASSETT, General Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after Nov. 8th, '85, trains will leave Emporium as follows:

For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:20 a. m., and 9:00 p. m. on week days. Pullman sleeping car on the 9:00 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 11:10 a. m. week days.

For Kane and intermediate stations, 11:10 a. m. and 7:20 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.

CHAS. E. PUGH, General Manager.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R. R.

JULY 4, 1885.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	7 35a.m.	2 45p m.	7 35a.m.
Irvineton	8 45a.m.	4 02p.m.	8 41a.m.
Warren	8 58a.m.	4 17p.m.	8 56a.m.
Junction	9 50a.m.	5 15p.m.	9 48a.m.
Lily Dale	10 39a.m,	6 10p.m.	10 37a.m.
Dunkirk, arrive	11 2 a.m.	6 45p.m.	11 12a.m.

Going South.	Mail. No. 1.	Express. No. 3.	Sunday. No. 5.
Dunkirk, leave	9 40a.m.	4 00p m.	2 40p.m.
Lily Dale	10 13a.m.	4 38p.m.	3 14p.m.
Junction	11 05a.m.	5 45p.m.	4 08p.m.
Warren	12 m.	6 44p.m.	5 06p.m.
Irvineton	12 15p.m.	7 00p.m.	5 22p.m.
Titusville Ar	1 30p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p. m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily. Uniontown, 10:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m, Arrive, 7:00, 9:00, 10:20 a. m., 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m. Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.

B. DUNHAM, General Manager.

E. D. SMITH, Division Passenger Agent.

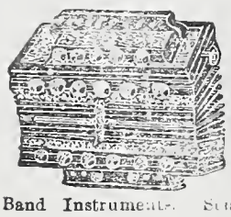
Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT DEC. 14, 1886.

[Read Down.]		Central Time.	[Read Up.]	
5 00a.m.	8 15a m.	Bradford	6 20p.m	11 35 a.m
5 30a.m.	10 35a m.	Salamanca	4 13p.m.	8 00 a m
6 45a.m.	11 30a.m.	Jamestown	3 03p.m.	7 08 a.m
9 20a.m.	2 00p.m.	Meadville	12 35p m.	5 10 a.m
10 55a.m.	5 43p.m.	Youngstown	10 35a.m.	1 25 a.m
12 52p.m.	7 30p.m	Shousetown	8 30a m.	11 17 p.m
1 30p m.	8 00p.m.	Pittsburgh	7 50a m.	10 35 p.m

W. C Quincy, General Manager.

A. D. Smith, General Pass. Agent.



JOHN F. STRATTON,
49 Maiden Lane, N.Y.,
Importer & Wholesale Dealer in
ACCORDEONS,
Mouth Harmonicas
and all kinds of Musical Instruments, Russian G[illegible] Violin Strings,
Band Instruments. Send for Catalogue.

JOHN CONLEY,

MANUFACTURER OF

IRON, GAS AND STORAGE TANKS,

—AND—

GASOMETERS.

REPAIRING PROMPTLY ATTENDED TO

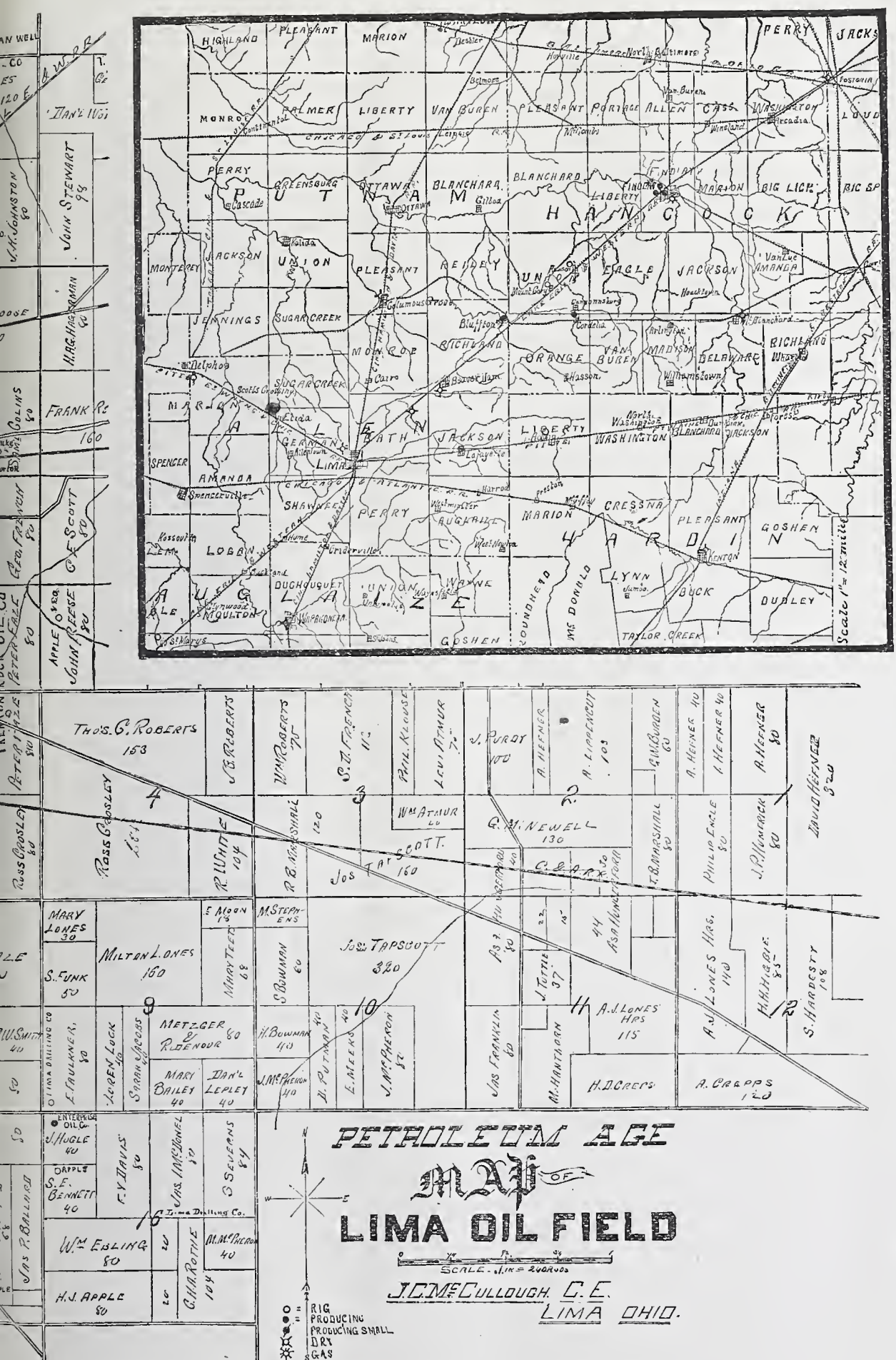
Shop: Erie R. R., near Washington St.,

BRADFORD, PA.

P. O. Box 1367.

Petroleum Age.

JUNE, 1886.



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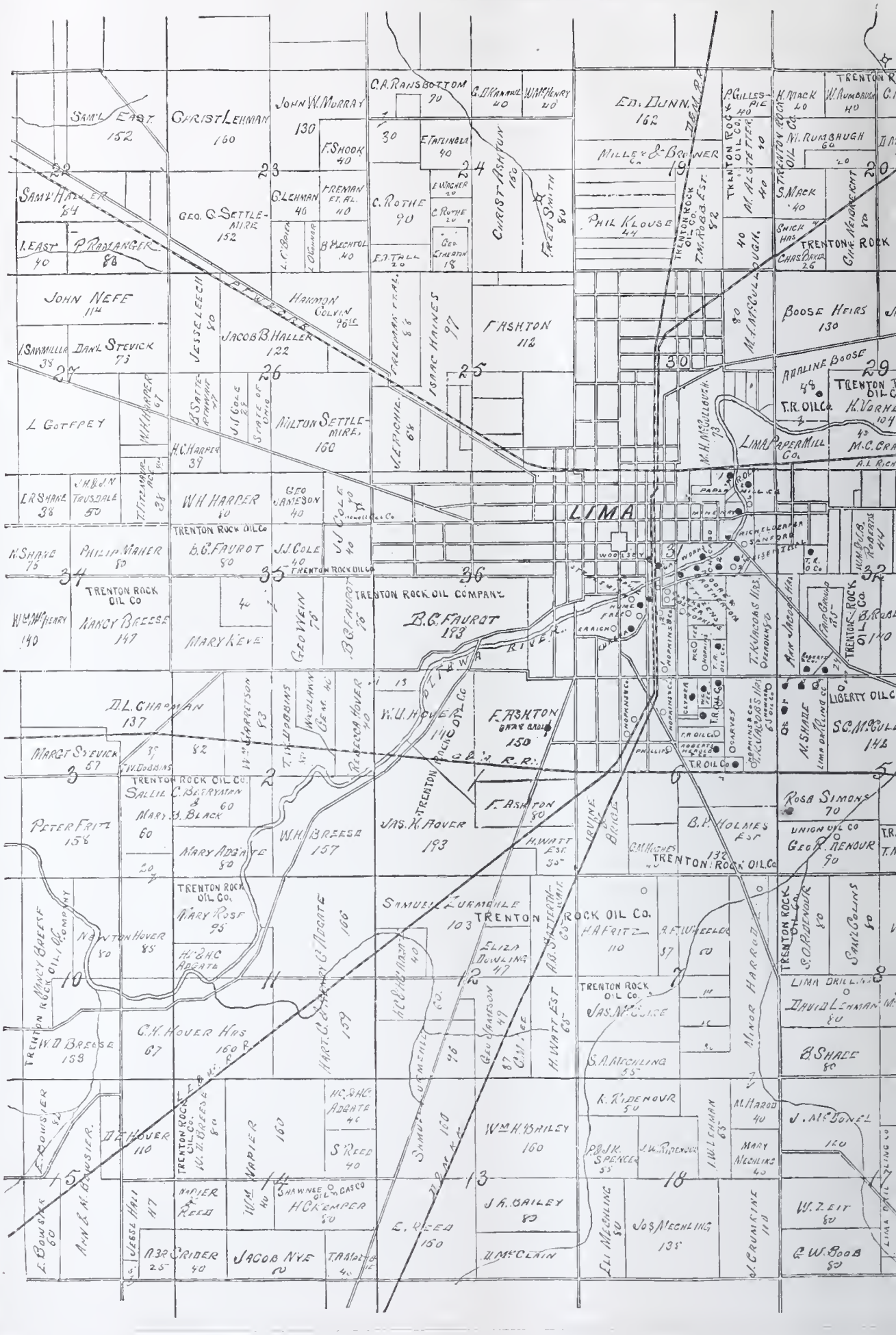
BRADFORD, PA


LIMA
TRENTON ROCK OIL COMPANY
B.C. FAUROT 183
F. ASHTON 150
F. ASHTON 112
F. ASHTON 80
CHRIST ASHTON 160
ED. DUNN 162
MILLER & BROWNER
PHIL KLOUSE 44
SAM'L EAST 152
CHRIST LEHMAN 160
JOHN W. MORRAY 130
GEO. G. SETTLEMIRE 152
JOHN NEFE 114
JACOB B. HALLER 122
HARMON COLVIN 96
ISAAC HAINES 97
MILTON SETTLEMIRE 160
L. GOTFREY
L. R. SHARE 38
WM. HARPER 40
TRENTON ROCK OIL Co
B.C. FAUROT 80
J.J. COLE 40
NANCY BREESE 147
MARY KEVE
GEO. VEIN 75
D.L. CHAPMAN 137
MARGT. STEVICK 67
PETER FRITZ 158
MARY ADAIR 50
W.H. BREESE 157
JAS. K. HOVER 193
W.U. HOVER
REBECCA HOVER 40
TRENTON ROCK OIL Co
SAMUEL LUKEHILE 103
ELIZA DUNLING 47
HA FRITZ 110
A.F. WHEELER 37
JAS. McCLURE
S.A. MECHLING 55
K. RIDENOUR 50
WM. H. BAILEY 160
J.A. BAILEY 80
E. REED 160
JACOB NYE 70
T.A. MAPLE
H.C. CRIDER 40
NEWTON HOVER 85
C.H. HOVER HRS 160
TRENTON ROCK OIL Co
MARY ROSE 95
H.C. & H.C. ADAMS
S. REED 40
HCK EMPER 80
SHAWNEE OIL & GAS Co
NAPIER & REED
WM. NAPIER 160
J.E. HOVER 110
TRENTON ROCK OIL Co
W. BREESE 80
ANN E. W. BOUSIER
E. BOUSIER 80
JESSE HALL 47
P.B. & J.R. SPENCER 55
J.W. RIDENOUR
J.W. LEHMAN 65
MARY MECHLING 40
M. HAROD 40
J. McDONEL 160
W. ZEIT 80
G.W. BOOB 50
LI MECHLING 50
JOS. MECHLING 135
J. GRUNKINE 110
J. McCLAIN
B. SHAFER 80
DAVID LEHMAN 80
LIMA DRILLING Co
ROSA SIMONS 70
GEO. R. MENOUR 90
UNION OIL Co
B.P. HOLMES EST 132
TRENTON ROCK OIL Co
LIBERTY OIL Co
S.C. McGULL 142
N. SHAFER
T.R. OIL Co
ROBERTS & HOLDEN
OSAKES
PHILLIPS
T.R. OIL Co
T.R. OIL Co
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THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., JUNE, 1886. NO. 5.

THE STORY OF KINZUA VILLAGE.

BY DR. E. A. VAN SCOY.

KINZUA VILLAGE has aspired to be known as an oil town for twenty years. Its location on broad and fertile banks, where the swift flowing Kinzua creek, unites with the dark waters of the Allegheny, attracted the attention of the oil prospector long before Bradford was thought of as a producing centre. In the early days of the oil industry it was generally believed that the oil fields followed the course of the streams, and the numerous belts and small pools that were discovered at points along the Allegheny, lent color to the theory. In 1865 some New York capitalists secured lands about the village for oil purposes. Two companies were formed, the Kinzua Oil Company and the Kinzua Oil Association. A half dozen wells were drilled, but none of them were more than six hundred feet deep. The best show of oil was in the first well. This was on the Morrison farm, five miles up the creek on the north side. Its battered derrick is still standing and within a few years oil has been bailed from this well for various domestic and mechanical purposes. A second well, four and a half miles from town, was located on the John Shear farm. It was drilled 515 feet. On the Sylvester Strong farm, a well was sunk 600 feet, which showed some gas and a little oil. One mile above town, on the Claudius English farm, a well was drilled 700 feet with no better results. Other wells were afterwards put down on the Hoyt, Gibson and Hook farms. In the year 1875, Hunter & Cummings sunk a well on the Cobbett farm; it was drilled "wet," no casing being used, and struck the Dew Drop or Clarendon sand at a depth of 825 feet, with a small showing of oil. This preliminary attack of oil fever occurred nearly twenty-five years ago. At no time since can the town be said to have fully recovered from the illness. But strange to note, the nearest oil development is still quite remote from the village. In the meanwhile other fields rose and fell, the Bradford field came into prominence and showed the world how cheaply it could produce crude petroleum, and it was not until September, 1880, when the Dew Drop well found oil at 855 feet, that the village's aspirations were even faintly begun to be realized.

No proper test of the Kinzua territory was made until 1878, when the writer and others, drilled a well on Wolf run, one mile east of the village. The mouth of this well was at an elevation above tide of 1306 feet. At a depth of 425 feet some gas was obtained; more was found at 725, and at 910 feet some oil in a very fair looking sand made its appearance. Although there was not sufficient oil to fill up any while drilling, the gas was strong enough to blow the oil out of the well which, running down the cable, made it look as though there was a large quantity of oil in the hole. The old residents still believe they saw from 200 to 500 feet of oil in the well while it was drilling. It was allowed to stand some time when it was drilled to a depth of 1530 feet. When started up the hole was nearly full of oil. At 1400 feet another sand, quite coarse in texture, was found with considerable gas and a trace of green oil. This well was abandoned and the machinery and rig was moved up Kinzua creek, two and one-half miles, to a spot on a little stream called the Mead and Eddy run.

Here the celebrated Dew Drop "mystery" was drilled, a well that caused a great deal of excitement at the time and which was the scene of many laughable incidents. A number of the most noted scouts in the region trace the beginning of their experience to this well. After the sand was struck the well was shut down and filled with water, the tools were hung in the hole at the rope socket, and a lot of old clothes were packed in the space between the casing and the tools. The next day the well made several small flows, some of the oil spurting out around the tools, and the remainder going into the gravel at the bottom of the conductor hole. The oil was so light that after a day or two all traces of it had evaporated, and the farmers and residents who actually saw the flow could not make themselves believed by scouts and others. An old cable and sand line was then piled up around the hole and a guard stationed at the well. There were many threats of forming a posse of men at Kinzua to take possession of the well and drill it in. A party did go up one night with that intention, when a shot or two fired in the air sent them running away, and one large man, a land agent, once dubbed "Uncle Pumblechoak"—from his resemblance to that character of Dicken's—in his haste left the impression of his body in a mud hole just below the well. In the latter part of September, 1880, work was again begun on the well in the night. On the morning of the following day, the old settlers, big and little, of Kinzua, came clawing their way through the bushes along the stream, greatly excited with the story that Kinzua creek, clear to the village, was covered with oil. They could follow it to within 200 feet or more of the well when all trace of it was lost. The rig apparently had not been touched, there were no traces of oil about the derrick, and how that oil came in the creek is a mystery to them to this day. This report of the astounded natives attracted a great many oil men to Kinzua Village. Among them was John Bryan, who will be remembered by the early producers in the Bradford field as a tank builder. Bryan came in the derrick and said: "Boys, I'll give you five dollars to run the bailer?" The bailer was run, and when it came out Bryan tasted the liquid on the sand line and said, "Brine, (no joke) by thunder! Boys, I'd rather give $500 than not know that." He left the well thoroughly disgusted and has never returned to the field. A bad fishing job, in the shape of the bowl of a horn socket broken off on top of a bit, was now on hand. It required two or three months before it was removed. During this time, by a peculiarity of the casing, the well was made to show alternately oil and salt water,

which kept the scouts and all hands busy guessing what was to be the outcome of the well.

During the long fishing job visitors were numerous and in order that the men might not be called from their work by the curiosity of land speculators and lease hunters, the derrick was kept more closely guarded than ever and all outside parties rigorously excluded. Many ruses were adopted to gain information of the true inwardness of the venture, but few of them were successful in securing the coveted information. A well-known resident of the oil regions came to the shanty one stormy afternoon saying "that his horse was sick and he wished to put him in the barn." He was given permission to do so and invited into the shanty. After getting warm he brought out a new pack of cards, never before opened, and asked the men to play. At the same time he displayed a large bottle of whisky and invited all hands to take a drink. His object was plainly to loosen the guards' tongues by the free use of the stimulant, but in drinking the guards to the communicative stage, his own condition became such that he forgot his object, and they were obliged to put him to bed. When he recovered from this and subsequent bibbing he found himself down in Virginia with no recollection of the six weeks' lapse of time.

Among the many who made Kinzua Village their abiding place for a season, all the time keeping the well "up the creek" under close surveillance, were the veteran oil scout S. B. Hughes, and his energetic lieutenant, Harry Beam. A small coterie of plucky individuals, under the leadership of P. C. Boyle, who was then on hand as a representative of the ill-starred *Petroleum World*, gained admission to the derrick one rainy night and secured a couple pints of oil from the mystery. By counting the lengths of tubing which were standing in the derrick, and which had been used in the fishing job, then progressing, a good estimate of the depth of the well was obtained. On the following morning, while Boyle was enjoying a lengthy nap over his arduous night's work, Hughes secured his bottle of the precious fluid and started Beam off to Bradford with it. When the present editor of the Oil City *Derrick* awoke he at once missed his property and started on a quiet hunt for it. It was not long before he discovered the absence of Beam, and hitching up his horse he was soon in close pursuit. A wild chase followed in which Beam was overtaken within three miles of his destination and compelled to return the bottle. Boyle drove back triumphant to Kinzua Village. When Beam reached Bradford he wired his chagrined coadjutors simply: "Overtaken by Fenians and forced to give up baggage."

A great deal of money was invested in the lands about Kinzua Village, on the strength of the mystery well, the larger part of which remains still anchored among the denizens of the village. The mystery well was finally completed and proved to be of 30 barrels calibre. It is still producing oil, surrounded by some forty odd producing wells, that have been drilled since the exciting fall of 1880. The shanty connected with the well had a sign up, "Dew Drop Inn." When the narrow gauge railroad from Bradford to Kinzua Village was built the station was named Dew Drop, and the company who owned the well took the name of the Dew Drop Oil Company.

Early last winter ('84 and '85) James Parker and others drilled a well on the Fuller farm, on the banks of the Allegheny river, about one-half mile above Kinzua Village, and found some slush oil at 420 feet. It created some little excitement and Parker succeeded in selling an interest in a lease he had on the Swift farm, about one mile farther up the river, to Willard White. A second well was drilled on the banks of the river, and at 690 feet a very nice white sand was struck. The well had a quantity of gas and made such a large showing that the pipe line people were induced to work night and day to build a line from Wardwell. A large duplex pump was put in capable of forcing away 300 barrels daily. Considerable land changed hands and at large figures. In some instances fifteen or twenty buyers would be after one land holder at the same time. Those who were satisfied with a good thing sold out and made some money. Several greedy ones still hold lands which have proved barren of oil and which they might have sold when the excitement was at its height for a good round sum.

Parker & White played a heavy hand with their well. It was put under close guard and no one save the tank builders and owners were allowed to come within a half mile of the derrick. No better spot for concealment could have been chosen. The river was on one side of it and on the other cleared fields. No convenient obstruction left any place of concealment for the alert scout. A huge gas light at night made all the surroundings as light as day, and none could approach within hearing distance of the derrick without being seen. A telephone line was laid direct from the well to the owner's room at the Carver House, in Warren. A Western Union wire was run in the derrick, where a telegraph operator was stationed to communicate quickly with the outside world. Everything was in readiness to bring about a fall in the price of petroleum and give Mr. White a grand opportunity to work some profit out of the bear side of the market. The AGE for April, 1885, gives the following account of the result:

"March 27, 1885, was the date set when the great Kinzua gusher was to be let loose on an unsuspecting public and an 82 cent market. But, strange to say, the great guns of the Oil Exchanges paid very little attention to Mr. Willard White and his well. On the morning of the eventful day a score or more of lease hunters and petroleum seekers arrived and the old village began to stir with life and bustle. All day long the derrick on the bank of the river was gazed at from afar off, while Mr. White and his satellites rushed to and fro fully alive to the importance of their position. Along in the afternoon the walking-beam began to wag and the drill to reach deeper down into the earth. The well had been spraying oil, and it continued to spray, and that was all there was of it. The market obstinately refused to go down, and Mr. White returned to Boston, a sadder, wiser and probably poorer man."

Instead of 2000 barrels or more a day the well when opened up made but 22 barrels. The great difference between what it actually produced and what it was expected to do by its too sanguine owners, brought odium upon the budding field, and it has since often been contempuously termed the "soda water" field. After shooting this well averaged over 100 barrels the first few days. The next well drilled was the Beecher & Copeland well, on the Harris farm, across the valley, and one mile east of the Parker & White. This well was a small well and very nearly marks the northern boundary of this now prolific pool or belt. The next well in of importance was the Parker & Phillips, on the Marsh, three-quarters of a mile away from the two above mentioned wells, and with them forming the third side of a triangle. This well produced 300 barrels the first fifty hours and developed good staying qualities.

Then come in succession Anchor, Nos. 1 and 2, Rollins, both large wells; Nos. 1, 2, 3, 4, Anchor, on the Morrison; Smith, Bright & Co.'s wells, on the Rollins and English farms, all wells starting at from 50 to 250 barrels per day. Phillips & Collins' No. 3, Marsh, has a record of 20,000 barrels the first four months, and now the flats and hillsides are covered with derricks. This sand is struck on the flats or low land at about 650 feet. It is a pebbly, white sand and lies about 100 feet above the Dew Drop formation. It corresponds in elevation with the stray sand of that place, though differing from it in quality. The elevation above tide level is 1230 feet, or very close to that, making this sand 580 feet above tide level. The longest direction in which producing wells are found runs a few degrees north of west, and is bounded on the east by Anchor Oil Company's Nos. 8 and 9, Morrison tract, and on the west by Collins, Morse and McCalmont Oil Company's wells, on the Rollins. In the space between these wells the sand is raised in the centre where a beautiful white sand is found. From the centre, the top of the sand rapidly diminishes until when struck at a depth of 680 feet on the north and south it become lost so far as its coarseness is concerned and merges into a fine, gray sand, resembling that found at Clarendon and Tiona. Although there is about 120 feet of this gray sand, it is barren, or has been so far in those wells which have been dry in the upper section of sand and which have been drilled into the lower. Few or none of the producing wells have been drilled into this lower formation. On the banks of the river, and still west of the Collins and McCalmont wells, spoken of above, another sand is found which is struck at a depth of 685 feet. Adding fifteen feet elevation for the wells on the flats, makes a difference of fifty feet between these two sands. The sand in the wells near the river is coarser than that found in the wells on the flats, and all the wells found in it show considerable gas. As there are salt water wells of great magnitude, between the flat wells and river wells, and the river wells contain no salt water whatever, there is the probability of these river wells being on the extremity of another pool on the west side of the river, and that they bear the same relation to it, that the Anchor's 8 and 9 (which it will be remembered were heavy gas wells) do to the pool on the flats. Another evidence in favor of this theory is the fact that the Collins and Morse wells, on the west side of the river, are better than their neighbors on the east side.

The various sands found in this section of the field are so numerous and of such different characteristics as to puzzle the operator who has paid but little attention to tide levels. The first in the list, and the highest above tide, is the Sugar Run sand, in which some wells of pretty fair size are obtained. It is about 670 feet above tide and close to the Bradford second sand horizon, though differing from the latter sand somewhat in texture. Then, next in order comes the Anchor Oil Company's sand at Kinzua, 580 feet above tidewater, then that on the river at 530 feet above; then next the Dew Drop sand at 454 feet above tide level. Following the same general course we have the Wardwell sand at a depth of 395 feet above tide; the Glade and Cornen gas sand still lower; then the Cherry Grove, (if it does not correspond with the Glade), and lastly, Lower Sheffield, Cooper tract, etc., at a depth of from 98 to 126 feet below tide level. This lower sand is probably the same sand found at 1400 feet in the first well at Kinzua, spoken of in this article, and we will be very much surprised if at some future time large wells are not found in this sand somewhere in the neighborhood of Kinzua Village.

OIL REGION CHRONOLOGY.

For May, 1886.

May 1.—Age Oil Report shows 353 wells completed in April, 58 of which are dry; new production, 8782 barrels; new rigs, 247; old rigs 140; wells drilling, 356; total field operations for April, 743; decrease from March figures, 55. Market opened very weak at 73¼c, and broke to 73c. About 1 o'clock it firmed up to 73½c, weakened to 72⅞c, and closed at 73⅜c bid. Carrying rates—Bradford, Oil City and Pittsburgh, 45c; New York, 55c. Twenty-four wells at Washington gauge 4500 barrels. Clark, No. 2, 75 barrels an hour. Gordon, No. 4, 12 feet in sand and making 16 barrels an hour. M. & S. well, on Wylie farm, reported at 650 barrels for twenty-four hours. Smith, No. 2, still gassing heavily, impossible to drill deeper at present. No. 1 doing 335 barrels. The Clinton & Swayne well, on 345, Kane, opened up and pronounced good for 5 or 10 barrels; most northern well in the field and only had ten feet of sand. Buckeye Pipe Line is building a 35,000-barrel iron tank near Lima, Ohio. Premium on Washington oil reduced to 8 cents per barrel. April report from Lima field shows 31 wells in the field, an increase of 13 since the 31st of March; the wells drilling number 48. James Dutton, the man who drilled the first oil well at Macksburg, died at Marietta, Ohio.

May 2.—Sunday. Heavy oil fires in the Allegany field. The McCalmont Oil Company lose 28 rigs and numerous other parties entail small losses, amounting in all to about $50,000.

May 3.—Market opened firm at 73½c, and advanced under good buying to 74c, fell off to 73c, and braced up to 73¼c. It afterwards broke to 72½c and closed at 72¾c bid. Carrying rates 45c to 55c. Clark, No. 2, Washington, averaged 69 barrels an hour. Gordon 4, nearly through sand, and doing 16 barrels an hour. Union, on Taylor, 387 barrels in twenty-four hours. Vandergrift, No. 1, on Barre, strikes oil in Gantz sand; No. 2 reported flowing at 200 barrel rate. Clinton & Swayne well, on 345, Kane, shot with slight improvement. Seventy producing wells at Kane doing about 4000 barrels a day.

May 4.—Market very quiet; ranging between 72½c and 73⅛c. Carrying rates unchanged. Washington—Clark, No. 2, doing 68 barrels an hour; Gordon, No. 4, completed and made 354 barrels last twenty-four hours; Union, on Taylor, 391 barrels in twenty-four hours; Hallam well, on Clark heirs' property, finds plenty of gas in Gantz sand. Wild-cat well at Jefferson Centre, Butler county, reported flowing through plugs. Fertig & Wood's No 1, on Zane's lease, Grand Valley, shot and takes fire from boiler; estimated at 100 barrels.

May 5.—Market opened weak at 73⅛c, fluctuated between 72⅞c and 73½c, and closed at 73¼c. Vandergrift, No. 1, on Barre farm, Washington, drilled all day in fair sand and made a 15-barrel flow. No. 2 still drilling in good sand with no increase. Washington gauges —Clark, No. 2, 1488 barrels; Union, Taylor, No. 1, 365; Gordon, No. 4, 336; Smith, No. 1, 405. Thayer, No. 2, on Clark, struck by lightning and burned with three 600-barrel tanks and 1000 barrels of oil. A 600-barrel tank at Gordon, No. 1, was likewise destroyed. White & Co. strike a fair well at Renfrew, Butler county, estimated good for 30 barrels. Apple well, at Lima, reported making a good showing.

May 6.—Market opened weak at 73⅝c, weakened to

73½c, and advanced to 74c. Afterwards fell off to 73⅛c, and closed at 73⅜c. Carrying rates 45c to 60c. Belmont Oil Company's No. 1, on Cameron, striks oil in the Gantz sand. Vandergrift, No. 1, on Barre, drilling in Gantz sand, with 1200 feet of oil in the hole. Fire at Thayer, No. 2, extinguished. Raccoon Oil Company find two dry holes at Shoustown, one on the Kriess, the other on the Doud's farm; both northeast of the McCoy producers. Economites get a good well at Legionville, northeast of the Shoustown field; filled up 800 feet in two and one-half hours. C. B. Whitehead is confirmed as postmaster of Bradford by the Senate. Body of Thomas J. Barney, of St. Paul, Minn., cremated at Sampson's Natural Gas Crematory, Pittsburgh.

May 7.—Market somewhat stronger; opened at 73½c and closed at 74⅛c. Washington—Hallam, on Clark, finds more gas in fifty-foot; drilling for Gordon sand. At 1 o'clock this morning, as John Disnee, a tool dresser, was passing near Thayer, No. 1, carrying a lantern, the gas ignited, setting the tank on fire; flames communicated to Gordon, No. 1, burning the rig, with 2400 feet of tubing and sucker rods, which were standing in the derrick. Disnee was knocked senseless by the explosion, but escaped without serious injuries. Three tanks with 500 barrels of oil were consumed. Gordon, No. 4, gauges 310 barrels. Vandergrift, No. 1, Barre farm, drilling in inferior sand with no increase in oil; has made but one flow. Cameron farm well makes a small flow. Economite well, at Legionville, makes a couple small flows.

May 8.—Market opened steady at 74¼c, fell off to 74⅛c, rallied to 74½c, sold down to 73¾c, and closed at 74c. Twenty-five producing wells at Washington gauge 3387 barrels. Cameron, No. 1, drilling in "fifty-foot" with a good showing, made 100 barrels last twenty-four hours. Clark 2, doing 62 barrels an hour. Gordon, No. 4, 273 barrels a day. Wallace well, Shoustown, shot last evening, made 55 barrels first six, and 200 barrels first twenty-four hours. Fire at Eclipse refinery, Franklin; fifteen bleaching vats and 800 barrels of oil destroyed; loss, $5000.

May 9.—Sunday. Sudden death of C. S. Woerishoffer at New York, the great bear of the Stock Exchange and a large speculator in oil.

May 10.—Market opened steady at 74⅛c to 74¼c, and weakened to 73¾c. About 1 p. m. it firmed up to 74⅜c, but fifteen minutes before the close broke to 73⅜c. Washington—Cameron, No. 1, 20 feet in sand and made 80 barrels last twenty-four hours. Munhall & Smithman, on Wylie, 68 barrels; Gordon, No. 4, 288; Thayer, No. 2, 1368. Eighty-two producing wells at Kane gauge 4161 barrels. William Bush shoots and kills his brother Philip, at Wilcox, in Elk county.

May 11.—Market opened firm at 73½c, went up to 73⅝c, and broke to 73⅜c. Afterwards sold down to 73c and closed at 73⅜c. Washington—Clark, No. 2, doing 47 barrels an hour; Gordon, No. 4, 256 barrels last twenty-four hours; Union, No. 1, Taylor, 390 barrels; Cameron, No. 1, made 65 barrels last twenty-four hours, still drilling. Munhall & Smithman, on Humbert, ten feet in Gantz sand, with lots of gas, but no oil. McKinney well, on Glenn, through "fifty-foot" with no oil nor gas. Sudden death at Atlantic City, N. J., of J. B. Brawley, one of the leading lawyers of the Crawford county bar. John Barr, a well-known oil region driller, who was "on tour" at "646," killed by a boiler explosion at the Robbins well, on the McCrum farm, thirty miles from Wheeling. Buckeye Pipe Line begins taking oil in the Lima field.

May 12.—Market opened at 73⅝c, and ranged between 73⅜c and 74⅛c, closing at 73⅝c bid. Carrying rates—Bradford, 45 to 50c; New York, 60c; Oil City, 55c; Pittsburgh, 50c. Washington—Vandergrift, No. 1, on the Barre, struck the lower pay streak at noon and started flowing at 70 barrels an hour; No. 2, 70 feet in sand, improved from 12 barrels an hour in morning to 25 an hour in the afternoon; Willets, No. 3, on the Munce, in the first pay streak and doing 12 barrels an hour; Clark farm, No. 2, 48 barrels an hour; P. L. & H. Co.'s well, on Taylor, showing for an, immense gasser in the Gantz sand; Cameron 1, made 38 barrels, and Union, on Taylor, 335 barrels in twenty-four hours. Buckeye Pipe Line will pay but forty cents a barrel for Lima oil.

May 13.—Washington causes another break in the market. Opened at 73c, the next sale being made at 72½c, it then rallied to 72¾c, fluctuating between this point and 72¼c up to 12 m. It again weakened, falling to 71½c, and at 12:30 p. m. advanced to 71⅞c, went back again to 71⅜c, and closed at 71¾c. Carrying rates—Bradford, New York and Oil City, 45c; Pittsburgh, 50c. Washington—Barre, No. 1, dwindled to 18 barrels an hour in the afternoon; No. 2 made 1200 barrels first twenty-four hours; Willets 3, Munce, made 283 barrels in twenty-four hours ending this morning, and estimated doing 22 barrels an hour in afternoon; No. 1 drilling in "fifty-foot" and doing 6 barrels per diem; Cameron, No. 1, 30 feet in "fifty-foot," gauged 86 barrels past twenty-four hours. Twenty-nine wells gauge 4474 barrels. Pew & Emerson, on the R. D. Wylie, are through the Gantz and "fifty-foot" sands, with no oil nor gas. Clark, No. 2, 52 barrels an hour. Smith, No. 1, 379 barrels. Passenger train from Wellsville, N. Y., on the B., E. & C. R. R., struck a broken rail near Little Genesee, and one car was tumbled over on its side; passengers pretty badly scared, but none seriously injured.

May 14.—Market opened firm at 71⅞c, and advanced to 72⅜c, weakened to 71⅞c, rallied to 72⅝c, and closed at 72½c bid. Carrying rates 45 to 55c. Washington—Clark, No. 2, gauges 45 barrels an hour; Willets, No. 3, Munce, makes 319 barrels in fourteen and one-half hours; Cameron, No. 1, drilling in hard, white sand and made 45 barrels last twenty-four hours; Vandergrift 2, on Barre, doing 31 barrels an hour this evening. Vandergrifts strike a big gasser on the McMannis farm, near Taylorstown.

May 15.—Market dull and uninteresting. Opened at 72½c, went down to 71⅞c and closed at 72c. Carrying rates unchanged. Washington — Vandergrift 1, on Barre, finds better sand and begins to improve; it made 203 barrels in twenty-four hours ending this morning; No. 2 reported at 53 barrels an hour; entire field doing 4500 barrels.

May 16.—Sunday. Opera House at Sheffield, with two small buildings, destroyed by fire; loss, $10,000. Washington—Cameron, No. 1, 39 feet in hard, white sand and made but 19 barrels during past twenty-four hours.

May 17.—Market opened with sales at 71⅞c, advanced to 72¼c, weakened to 71⅛c and closed at 71¼c. Carrying rates 40 to 50c. Ninety-five wells at Kane gauge 5327 barrels. Washington—Vandergrift, No. 1, Barre, made 753 barrels in twenty-nine hours ending this morning, shortly after noon the drill run into soft sand and well started at 156 barrels an hour, and in evening was making 110 barrels an hour; No. 2, Barre, made 362 barrels in twelve and one-half hours; Willets, No. 3, Munce, did 216 barrels in seventeen hours. Total output of Shoustown field 352 barrels from six wells; nine dusters

have been drilled to date; Hood, No. 1, doing 43; McCoy, 55; Morrow, 20; Wallace, 150; Eachel, 80; Harper, 4 barrels. Martin Hanley, aged 25 years, accidentally drowned while running logs in Clapp's pond, at Tiona.

May 18.—Bulls completely demoralized. Barre, No. 1 well, Washington, reported at 2500 barrels, and with the failure of Craig & Lowrie precipitate a break of nearly five cents. Market opened at 70¼c, one cent below yesterday's closing, weakened to 70c, rallied to 70¼c and broke to 69⅝c, rallied again to 70⅛c and sold off to 69½c. At 11 a. m. 69⅜c was bid. Here the panic started, forcing prices down to 65⅞c without any reaction. It afterwards rallied to 66¾c, fell to 66¼c, braced up to 67¼c, then went down to 66¾c, fluctuating between this price and 68⅛c up to 1 p. m. At 2 p. m. 67¼c was bid, and it vibrated between this point and 68c up to the close, making very rapid changes, and closing at 67⅞c. Carrying rates 45 to 75c, Washington—Vandergrift, Barre farm, No. 1, gauged 440 barrels in four hours yesterday afternoon, and this morning was making 65 barrels an hour, in the evening had declined to 45 barrels an hour; No. 2, in twenty-one hours ending this morning made 600 barrels; Munce, No. 3, made 360 barrels in twenty-four hours; Hallam & Co., on Clark, in the Gordon sand, and starts at 10 barrels an hour; Willets 5, Munce, strikes first pay streak and started at 7 barrels first hour. Long oil sold out under rules on account of Craig & Lowrie being unable to meet their contracts amounts to 515,000 barrels in Pittsburgh, 673,000 barrels in Oil City and 420,000 barrels in New York.

May 19.—Market opened firm at 68¼c, advanced to 68½c, fell back to 68⅛c and rallied to 68¼c. Afterwards reacted to 67½c and closed at 68⅛c. Carrying rates 50 to 60c. Washington—Belmont Oil Company's well, on Cameron farm, still drilling, made 53 barrels last twenty-four hours; Hallam, No. 1, on Clark farm, drilling in hard sand and making 6 barrels an hour; Barre, No. 1, by two hours' drilling in afternoon increased its production from 45 to 75 barrels an hour, and in the evening the gauge showed 63 barrels an hour; No. 2 upon being agitated increased from 20 to 36 barrels an hour.

May 20.—Market opened firm at 68⅛c, advanced to 68½c and fell off to 68c. About 1 p m. it again began to weaken and slumped off to 67c. It rallied to 67⅜c, sold down to 66⅛c and closed at 67⅜c bid. Washington gauges—Willets, Munce, No. 3, 288 barrels; No. 1, 45; Cameron, No. 1, 31; Smith, No. 1, 391; Hallam & Co., 109 barrels in twenty-four hours; Vandergrift, No. 1, Barre, 68 barrels an hour; No. 2, 370 barrels in twelve hours; Pew & Emerson, on R. D. Wylie, through Gordon sand and dry; Gordon, No. 4, shot with ten-quart torpedo and made 178 barrels in thirteen hours, which is but little improvement; McKinney well, on Glenn, through Gordon sand, with no oil but plenty of gas. A company of men leave Bradford for the Du Bois mines to protect the working miners of the Rochester & Pittsburgh Railroad Company's mines from the strikes. Neil Farnum, a driller employed by F. E. Boden & Co., makes an unsuccessful attempt to cut his throat, while slightly deranged from dissipation.

May 21.—Market opened at 67⅜c, with sales at 67½c, weakened to 66⅞c and rallied to 67⅜c. It afterwards dropped to 66¾c, firmed up to 68c, sold back to 67⅜c and closed at 67⅞c. Carrying rates 50 to 60c. Washington—Cameron drilling in fine, hard sand and makes 63 barrels last twenty-four hours; Willets, No. 5, Munce, made 14, and No. 3, 225 barrels; Smith, No. 1, 328; Union, on Taylor, 440; Hallam, on Clark, 61; Thayer 2, on Clark, 46 barrels an hour; Barre, No. 1, 55 barrels; No. 2, 31 barrels. Lima field reported at 570 barrels a day. A five-year-old son of William Hirsche drowned in the Allegheny river at Parker.

May 22.—Market opened at 67¾c and advanced to 68¼c. It then weakened to 67⅝c, braced up to 68c, fell off to 67⅛c and closed at 67¼c. Carrying rates—Bradford, 60 and 65c; New York, 70 to 80c; Oil City, 55c; Pittsburgh, 50c. Thirty wells at Washington gauge 5497 barrels. Pew & Emerson, on R. D. Wylie farm, through all known sands and dry. Gordon, No. 4, made 237 barrels in twenty-four hours ending at 8 o'clock this morning. Meldrum well, on Byers lot, reaches the fifty-foot, showing some gas from upper sand. P. L. & H. Co.'s well, on Mrs. Morgan's farm, northeast of County Home, through Gantz sand with neither gas nor oil. Willets, Munce, No. 1, strikes the first pay streak. Lightning strikes the Manufacturers' Gas Company's drilling well, on the Edgar farm, in the Cannonsburg district, Washington county. Death of Charles H. Bittles, a well-known Bradford producer, at Newburg, O., aged 41 years. Ed Walton, charged with the murder of Al Kneely, at Marienville, last spring, found guilty of manslaughter and sentenced by the court at Tionesta to two years and four months in the penitentiary.

May 23.—Sunday. Cameron, No. 1, Washington, struck third pay streak last night, and this afternoon was doing 50 barrels an hour. At 4:30 a two and one-half hour gauge showed 400 barrels production. For two and one-half hours, ending at 10 p. m., it made 493 barrels, which was its best. Willets 3, Munce, increased to 700 barrels daily. Smith, No. 1, drilled deeper yesterday and improved to 500 barrels. Fire destroys Sarver's livery barn, at Butler, and several buildings; loss, $5000. Brackin & Co.'s flour mill burned at Jamestown; loss, $30,000.

May 24.—Cameron well, at Washington, reported doing 200 barrels an hour, and the market opened at 65¼c, two cents below Saturday's closing, and broke to 63⅞c without any sales. From this point it rallied to 64⅜c, but afterwards sold down to 62⅞c, and closed at 63½c bid. Carrying rates 50 to 65c. Washington—Cameron 1, makes 472 barrels in three hours, and averages 133 barrels an hour for the afternoon. Smith well 514 barrels in twenty-four hours. Union, on Taylor, struck another pay streak and increased to 37 barrels an hour. Meldrum well, on Byers, begins spraying oil from the "fifty-foot." P. L. &'H. Co.'s well, on Hough, through "fifty-foot" with no oil and no increase of gas. Production of Washington field 9500 barrels a day. Second tank of S. W. Pa. Pipe Line, at Ewing's Mill, completed. Ernst & Mandeville, of Olean, credited with a big strike of oil, on the McDonald farm, five miles southeast of Lima. Markham well, on lot 386, western side of Kane field, makes 140 barrels first twenty-four hours. One hundred and eight wells at Kane gauge 6200 barrels.

May 25.—Market opened firm at 63¾c and advanced to 64⅜c. It ranged between 64½c and 63¾c, and closed at 64⅜c. Washington—Cameron 1, 106 barrels an hour; No. 1, Barre, 450 barrels in twenty-four hours; No. 2, 285 barrels in ten hours; Smith, No. 1, 456 barrels in twenty-four hours; Union, on Taylor, 540 barrels in sixteen hours, ending this morning; Farley 2, through Gantz sand with no gas; Thayer, No. 2, (Clark) starts drilling deeper. Barnsdall well, on 346, Kane, below sand level and hopelessly dry. Sudden death from heart disease of Veterinary Surgeon A. H. Carr in Roberts'

stables, Bradford, aged 57 years. Fire at the Eclipse Oil Company's refinery, Erie, destroys one building.

May 26.—Market opened firm at 64⅝c, with a feeling manifest for better prices. It advanced to 64⅞c, reacted to 63¾c, strengthened to 64⅞c, and under good buying was forced up to 65⅜c, and closed with sales at 65¼c. Washington—Cameron, No. 1, gauge 2734 barrels in twenty-four hours; Willets 2, Munce, made 482 barrels in fifteen hours; Barre 1, 1082 barrels in twenty-four hours; No. 2, 524 barrels in twenty-four hours; Taylor, 350 barrels in twelve hours; Clark, No. 2, 37 barrels an hour; Smith, No.1, 493 barrels last twenty-four hours; Gordon 1, pumping 90 barrels a day; Munhall & Smithman, on Humbert farm, through Gordon sand and dry; has plenty of gas; Hess, No. 2, shot with fifty quarts yesterday, made 50 barrels first twelve hours thereafter; Meldrum, on Byers, drilling in "fifty-foot" with no improvement, making about 2 barrels a day; Associated Producers' well, at Wyland Station, down 2000 feet and a "mystery." Thirty-one wells at Washington produce 8817 barrels. Capital stock of Philadelphia Company, Pittsburgh, increased from $5,000,000 to $7,500,000.

May 27.—Market opened steady at 65⅛c, advanced to 65⅜c, sold down to 64⅜c and closed at 64¾c. Washington, twenty-four hour gauges—Cameron 1, 2505 barrels; Willets, Munce 3, 696; Barre, No. 1, 1082; No. 2, 572; Clark, No. 2, 954. Farley 2, forty-five feet below Gantz sand level and gassing lightly. Hess, No. 2, gauged 48 barrels. Vandergrift 2, on Weirich, showing oil in the stray. Stone well, lot 379, Kane, in sand with no show of oil. Albert E. Bixler, aged 17 years, in the employ of Kramer & Trax, carriage manufacturers at Oil City, burned to death by an explosion of Japan dryer. Death of Col. A. P. Duncan, a former resident of Oil City, and representative in the State Legislature for Venango county, at Auburn, Kansas.

May 28.—Market opened steady at 64¾c, with numerous bear rumors afloat. This was the highest point of the day. It sold down to 63⅛c and closed at 63½c. Washington—Willets, No. 1, Munce, drilling in better sand and production improved to 120 barrels a day; No. 2, 342, and No. 3, 362; Clark, No. 2, 342; Taylor 1, 310 last twelve hours; Cameron, No. 1, 2512 in twenty-four hours; Barre 1, 1020; Barre 2, 560; Smith, No. 1, 500. Vandergrift, No. 2, on Weirich, flowing 20 barrels a day from Gordon stray. Farley 2, showing more gas. Explosion of a tank and a still, at Acme refinery, Olean, seriously injures two employes, John Bush and John Cussan. Well reported at Montour run, north of Pittsburgh, good for 200 barrels. Alge well, at Findlay, O., said to start at 240 barrels an hour, and Collin's well, at Lima, 1000 barrels a day; nothing but canards of the bears. C B. Whitehead takes control of the Bradford postoffice.

May 30.—No market in Pennsylvania Exchanges on account of observance of Decoration Day. New York market opened at 62¾c, broke to 62c, rallied to 63c, and very dull until close, when it jumped to 64c. Thirty-one wells at Washington gauge 8597 barrels; Cameron 1, doing 2512; Barre 1, 1000; No. 2, 625; Union, on Taylor, 860; Smith 1, 595; Clark, No. 2, 912; Willets 1, Munce, 348; No. 3, 775. Pew & Emerson, mountain sand well, on Manifold, increased by an hour's drilling from 70 to 480 barrels a day.

May 30.—Sunday. Washington gauges—Smith, No. 1, 602 barrels; Cameron 1, 2803; Barre 1, 1000; Barre 2, 625; Union, (Taylor 1), 900; Willets, (Munce 3), 780. Philadelphia Company's well, on Riddle farm, Montour run, shut down, under guard.

May 31.—Market opened at 63½c, the highest point of the day, sold down to 62¼c and closed at 62¼c bid. Carrying rates 50 to 60c. New York market closed to observe Decoration Day. Washington gauges—Cameron, No. 1, 2424; Smith, No. 1, 536; Barre, No. 1, 900; No. 2, 625; Union, on Taylor, 722; Willets, Munce, No. 3, 725; Thayer, Clark 2, 816; Manifold, 340; Hallam well dwindles down to 12 barrels a day. Total production of Kane field 6184 barrels from 124 wells. W. N. George, a well-known producer, of Duke Centre, arrested on the charge of robbing the National Transit Pipe Line of oil for three years. Bursting of an engine wheel on McKinney's lease, Wolf run, causes serious and probably fatal injuries to George Seymour, of Bordell. Injunction granted by Judge Williams restraining Meadville Fuel Gas Company from laying pipe line in the city streets, dissolved by the Supreme Court at Harrisburg.

The Macksburg Field in May.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2186
April	64,137	7890	2401
May	58,596	6630	2104

Twenty-three deep wells and five shallow wells were completed in May in the Macksburg field. Notwithstanding the increase in the number of the completed wells, the daily production shows a decline of 297 barrels as compared with the preceding month. The number of producing wells on the first of June is 411, and the average productionper well a little more than five barrels. For April the average production per well was estimated at 6¼ barrels. On the 31st of the month there were 6 rigs up and 25 wells drilling in this field.

Theodore N. Barnsdall found a dry hole in the deep sands at the head of Goose Run, while Reader & Co. likewise completed a duster east of Elba. Three shallow dry holes were put down in May, on the Wicken's farm, west of Macksburg.

The well drilled by Murray at Rutland, in Meigs county, went through sixteen feet of barren sand, on May 24th, at a depth of 1362 feet. The well drilled for gas at Cambridge, O., one-half mile northeast of the Court House in that city, found sixty-two feet of sand. It was completed at a depth of 1090 feet and tubed. It has gas enough to flow one barrel of 33½ gravity oil every twenty-four hours.

BLUE print maps of the various oil fields to be had at the AGE office, price one dollar each.

THE GEOLOGY OF THE PITTSBURGH COAL REGION.

A PAPER READ BEFORE THE AMERICAN INSTITUTE OF MINING ENGINEERS, BY J. P. LESLEY, STATE GEOLOGIST OF PENNSYLVANIA.

[CONTINUED FROM PAGE 1317.]

THE UPPER BARREN MEASURES.

NEARLY the whole upland of the two counties south of Pittsburgh has a surface composed of the eroded edges of the Upper or Greene county and the Lower or Washington county group, so decomposed by the atmosphere, and concealed by agriculture, as to make a comparison of the coal beds in one place with another difficult.

The intercalated sandstones pass into shales, and the shales into sandstones, from township to township. The numerous limestones are thin and variable. The coal beds are almost all too thin to be mined, and generally make no obvious mark upon the ground. The compiled column obtained by a close survey of the northern part of Greene county was found scarcely applicable in the southern townships; and differed materially from that in Washington county. But two salient features present themselves unmistakably:

1. The whole formation is evidently thinner in Washington county than in Greene county, and continues to thicken southward into West Virginia; so that it is probable that the highest preserved bed is in Greene county, in spite of the superior thickness of the whole formation in Virginia; for the thickening takes place in the body of the formation.

Its numerous limestone beds seem to have been deposited in a long northeast and southwest belt; for if the geologist moves southward or southwestward into Virginia, he finds the limestones disappearing from his column, being replaced to a large extent by sandstones and shales.

Lithologically considered, the characteristic features of the Upper Barren measures as a whole are:

a. The absence of workable coal beds.

b. The presence of seventeen different limestone beds. The most persistent one of these, called the *Upper Washington limestone,* and adopted as the division line between the two groups, is persistent throughout the region and may be called thirty feet thick. To the geologist this limestone is as important for identifying his sections of the Upper Barren measures, as the Ferriferous limestone has long been in the study of the Lower Productive Coal measures; although measurements made from its top upward in Greene county, and from its base downward in Washington county, cannot be so well relied upon on account of the variable stratification of both groups already mentioned.

c. A number of sandstone deposits characterize the Upper Barren measures, the highest of which, near the top, is fifty feet thick; another, somewhat lower down, sixty feet thick, holds the thin Nineveh coal; and a third, called the Fish Creek sandstone, immediately underneath the last, is one hundred feet thick. In the Washington group a sandstone deposit eighty feet thick contains in its middle the thin Jollytown coal bed; and at the bottom of the group is a sandstone thirty feet thick. These sandstones mark the topography of the country strongly in different localities, but they cannot be used as good guides to the structure on account of the rapid local changes to which they are subject. In this they differ considerably from the great sandstones of the Lower Productive Coal measures, especially the Mahoning sandstone, and the sub-divisions of the Conglomerate; although these latter are themselves locally very variable. The contrast, however, must not be insisted on too strongly, considering the comparatively small area over which we can examine the upper sandstones, and the immense area over which and in every locality of which the lower sandstones have been minutely studied. If it were possible to replace the Upper Barren measures in their whole original outspread over Western Pennsylvania, perhaps these sandstones also might be found to be, barring local variations, quite as widespread and persistent as those of the bottom series. On the other hand, the probability of their being actually more local is increased by the fact that the Upper Barren measures of which they form parts seem, when taken as a whole formation, more variable both in thickness and in the character of rocks than the underlying earlier deposits.

d. Another prominent feature of the Upper Barren measures is the red shale formation, near their top, which measures eighty feet in thickness, and colors the soil of the extreme highland of Greene county, suggestive of the Permian strata.

e. Although the term Upper *Barren* measures is justified by the fact that the thinness of the few coal beds which exist makes them practically worthless, two of these coal beds, lying near the bottom of the formation are really valuable. The Washington coal bed and the Little Washington coal bed lie only ten or twenty feet apart. In Washington county the upper bed is ten feet thick and the lower bed one foot; a ten-foot sandstone parting them. Traced into Greene county, the big bed dwindles to two and one-half feet and the little bed swells to seven feet; and there eighteen feet of soft sandstone and clay separate them. What becomes of these two beds further south we do not know; but as oil and gas wells will undoubtedly be bored in great numbers in that region, we can only hope that if well borers keep no other record they will in all cases obtain at least the relative positions and approximate thicknesses of these two important coal beds. By reference to the colored geological maps of Washington and Greene counties, published by the Survey in 1878, it will be seen that the Washington coal bed plays the same *role* on the upland that the Pittsburgh coal bed plays in the valleys.

On these two maps the importance of the bed is recognized by figures before a W showing its calculated depth in feet beneath the present surface at a great many points. Similar figures before a P show the depth in feet from the surface down to the Pittsburgh bed; the distance from the Washington bed down to the Pittsburgh bed being about 500 feet.

It must not be supposed that the Upper Barren measures are confined to the country west of the Monongahela river. They formerly extended over Fayette and Westmoreland counties, and indeed over the whole State of Pennsylvania; for patches of them have been preserved in the anthracite coal basins, near Pottsville, and near Wilkesbarre. The highest hills east of the Monongahela river, along the synclinal lines in Westmoreland and Fayette counties, of which I must presently speak, are capped by these Upper Barren measures. But while in Greene 1100 feet of them have been preserved (*i. e.* more than 700 in the Greene county group, and something less than 400 in the Washington county group), the greatest thickness of any of the patches left in Fayette county is only 660 feet. Their

locations and sizes are shown on the colored maps of Fayette and Westmoreland counties, published in 1877; and it will be seen by reference to the report of that year on those counties that the Washington bed on that side of the river has a maximum thickness of ten feet; but with a character so extremely variable, and shale partings so numerous, as to make it nearly worthless

The plæontology of the Upper Barren measures, when studied, will be very interesting. The uppermost (14th) limestone contains occasional fish scales. The 10th limestone breccia has a shale roof with plants and occasional fish scales. The 6th or large snow white Upper Washington limestone is roofed by a black shale containing vast numbers of bivalve crustaceans and fish scales, all well preserved, and is often crowded with the long slender leaves of *sigillaria medardi* (?) as best seen at the tunnel east of Washington. Calamites are also abundant, but only a single fern leaflet (*Neuropteris*) was seen. In a middle dark band of this limestone great numbers of little bivalve crustaceans are well preserved; they are, however, common to all the limestones of the series. In the lowest fetid layer of this limestone are broken fragments of mollusks. The 4th or ferruginous limestone is rich in calcspar replacements of minute *Bellerophon* and *Euomphalus;* while branching *bryozoa* cover its weathered surfaces. A fish tooth (*Diplodus ?*) has been found in it, and a fine spine of *Ctenacanthus marshii*, five inches long. The 3d limestone has a black shale roof with many lamellibranch shells, and fish scales, some of which are large *Rhizodus*. The 2d limestone has a black shale roof rich in bivalve crustaceans and fish scales, with an occasional macreated leaf.

The total thickness of the Upper Barren measures as preserved is about 1100 feet.

THE MONONGAHELA SERIES.

The total thickness of these Upper Productive Coal measures is something less than 500 feet. Their sandstones and limestones outcrop along the hillsides of the Monongahela and Youghiogheny rivers and all their affluents, in bluffs and cliffs exposed to most satisfactory examination; and these outcrops are so bold and persistent that the study of the region is rendered as easy and simple as any geologist could desire. The Pittsburgh coal bed at the base of the group; the Redstone coal bed, sixty feet higher; the Sewickley coal bed, fifty feet higher; the Uniontown coal bed, more than 150 feet higher; and the Waynesburg coal bed, 100 feet still higher, have been mined or exposed by the pick in a thousand places. The order of the beds, first established in 1840, has remained unchanged under the long and minute examination made of them in the two first years of the present survey.

The overwhelming predominance in value of the Pittsburgh bed over any value that can be assigned to the four beds above it, has confined mining operations, and therefore practical explorations, to it. Hence, while we know in general, and to a great extent in particular, the character of each of the other four beds, there remains still much to be learned in detail respecting them. The names assigned to them speak for the several districts in which they reach their maximum size and quality, and where alone they have been to any extent mined. Each one in its own district is a valuable coal bed, ranging from three to five feet in thickness, and furnishing good coal; but, in other districts except its own, each of these four beds loses more or less of its practical value, and is neglected, except by here and there a farmer, who supplies his own wants and those of his immediate neighbors from its outcrop on his own land. For this reason these beds are sometimes mined when only two or two and one-half feet thick; and it is by means of many hundreds of such local openings that our knowledge of the group has become so nearly complete.

The great feature of the Upper Productive Coal measure group is its limestone rocks. So striking is this peculiarity, that the First State Survey, in adopting a nomenclature for the coal measures, called the interval between the Sewickley and Uniontown coal beds *the Great Limestone.* It consists, however, of three deposits: an upper limestone and shale, twenty feet thick; a middle sandy and shaly mass, sixty feet thick; and a lower limestone and shale, fifty or sixty feet thick. Between the Sewickley and Redstone coal beds the Fishpot limestone is sometimes twenty feet thick; and between the Redstone and Pittsburgh coal beds there is still another limestone which becomes ten feet thick. It may be said, therefore, that nearly one-fourth of the Upper Productive Coal measures consists of limestone. Variable as it is from district to district, this great limestone formation, which still occupies so extensive an area between the Ohio river and Chestnut Ridge, once extended eastward across the Ligonier valley and Somerset county into the Potomac river country; for a patch of it, preserved from the general destruction, may be seen capping the Salisbury ridge, in the upper valley of Castleman's river, between the Negro and Allegheny mountains in Somerset county; and its outcrops overhang the Pittsburgh bed far into West Virginia. I say nothing here respecting the nature and origin of these calciferous deposits, which occurred at intervals through the whole coal age; but I merely direct attention to the fact that a fine exhibition of the phenomenon can be studied by geologists among the collieries of the Pittsburgh region.

Another interesting feature of the Monongahela series is the great sandstone formation at its top, making the fine cliffs along the river at Waynesburg. The rock is massive, soft, weathering to honeycomb surfaces, ornamented with natural scroll work of curious patterns, and full of crevices and underground chambers, like Houston's cave in Cumberland township, Greene county; but up the side valleys and down the river towards Pittsburgh, the formation changes to shale; towards Virginia, it becomes conglomeritic and bears salt water in Virginia.

The plant bed, under the Waynesburg sandstone and over the Waynesburg coal, has been made classical by the elaborate report P 2 of Fontaine and White, published by the Survey in 1880. It is the repository of the finest leaf impressions obtained in the Upper Coal measures.

Of the 107 species described in P 2 the larger number occur in the Waynesburg plant bed; their admirable state of preservation appears in the figures on the thirty-eight plates of the report. Where the plant bed is absent the sandstone rests directly on the coal.

The Uniontown coal bed is sometimes a cannel shale, containing great numbers of fish teeth and scales.

The Great Limestone, under it, is often very fossiliferous, a minute whorled shell (*Pleurotomaria*) being very abundant, but not easily detected except on the rough weathered surfaces. The lower layers are non-fossiliferous, but valuable for hydraulic cement. At the bottom of the mass lamellibranch shells are common.

The Pittsburgh coal bed, at the base of the Monongahela series, has been sufficiently noticed already; but its gentle undulating outcrop along the sides of the valleys, mostly in the cliffs overhanging the river, yet sometimes

sinking beneath water level, cannot be properly explained until I come to a description of the anticlinal and synclinal waves which disturb the otherwise general horizontality of the region. On the southern side of the river, opposite to the city of Pittsburgh, the line of openings in the coal bed may be traced by the spectator at an elevation of 350 feet above low water mark and 1050 feet above sea level. Down the south bank of the Ohio the bed is 400 feet above the river level, and gradually retires into Washington county. Ascending the Monongahela river, it stands at 360 feet above river level at Braddock's field on the north bank; slowly slopes southward for twenty-five miles to near water level at Houston Station; then rises to Belvernon; passes beneath the river at Brownsville; makes its appearance again for a short distance at Fredericktown and Millsborough; is 185 feet beneath the bed of the river sixteen miles from the State line; rises to water level at Gray's Landing, and stands 370 feet above it at the mouth of Cheat river, inside the Virginia border.

But I must proceed with the description of the next underlying group of 600 feet of strata: the Lower Barren measures, or Barren measures proper of the First Survey, which I may call the Pittsburgh series; for all the hillsides in sight of us are made of the upper half of this series, and the lower half of it lies immediately beneath our feet.

THE PITTSBURGH BARREN SERIES.

This group has been constituted in two ways; by measuring from the Pittsburgh bed down sometimes to the top of the Mahoning sandstone, and sometimes down to the Upper Freeport coal bed beneath it; a difference which has given rise to needless embarrassment and controversy, there being no geological rule agreed upon in such cases. Some geologists prefer to *terminate* a pile of deposits with a coarse rock, supposing it to be the best mark of some physical change in the condition of things. Others prefer to *begin* a new series of deposits with such coarse beds. I myself prefer to include the Mahoning sandstone in the pile of Barren measures, and to call the Upper Freeport coal bed the top of the Allegheny river series; chiefly for the reason that we can then make the distance from one great coal bed down to another great coal bed the measure of an interval of time, during which no notable coal beds came into existence in the Pittsburgh region Of course all such arbitrary sub-divisions of the column of coal measures stand good only for the district in which they are made, and lose their value when applied to other regions.

With this understanding I may say that the total thickness of the Barren measures is something less than 500 feet at the Virginia State line, about 600 feet in the Monongahela river country, and nearly 700 feet in some other parts of Western Pennsylvania.

Thus constituted, the group includes four principal sandrock formations: the Connellsville sandstone, lying 50 feet beneath the Pittsburgh coal bed; the Morgantown sandstone, 150 feet beneath the Pittsburgh coal bed; the Saltsburg sandstone, 350 feet beneath the P. C.; and the Mahoning sandstone, at the bottom, divided into two by a little coal bed, and varying as a whole between 70 and 110 feet. All three spread widely through the region, making the valley sides steep and rugged with cliffs, dropping huge fragments into the streams, and keeping the geologist well aware of his horizon in the series. But these sandstones, like all rocks, although persistent as a whole throughout the region, locally break up and fine away into sandy shales, with outcrops more or less concealed. Each has its maximum development in some one district: the Morgantown being named from its cliffs in West Virginia; the Connellsville, from its fine exposures at the base of Chestnut Ridge; and the Mahoning, fifty years ago, from its magnificent exposures along that creek in northern Armstrong and Indiana counties.*

The limestone beds of the Barren measures are chiefly near the top, under the Pittsburgh coal bed, and over the Connellsville sandstone. On the Monongahela, at Lock No. 4, the Pittsburgh coal bed rests upon a limestone, twenty-five feet thick, with others below it for a hundred feet. A limestone, four feet thick, with a little coal bed over it, caps the Morgantown sandstone. Below the Morgantown sandstone, that is, 250 feet beneath the Pittsburgh coal bed, lies the *Crinoidal limestone*, two to four feet thick, which has been found of so much utility in a gelogical study of the region, as a universal keyrock or base of vertical measurement. Small as it is, it is found at so many distant localities, and is so easily identified by its multitudes of crinoidal disks, spines and shells,† that it would be well for every mining engineer in the region, to become acquainted with it. Well sinkers can use it in the same manner, as they have grown accustomed to use the Ferriferous limestone in the oil region. Its description may be found, with an account of the various localities at which it has been observed, in various volumes of Reports of Progress upon the counties of Western Pennsylvania.

An equally remarkable thin *black limestone* occurs about a hundred feet over the Mahoning sandstone, which can be put to good use where the crinoidal limestone is absent or concealed.

As for the coal beds of the Barren measures, taking the whole region into account, they amount to nothing; but, thin and poor as they are, and sometimes disappearing from view altogether, they seem to occupy regular positions in the column; this, however, cannot be absolutely demonstrated, because a connection between the numerous exposures is often impossible. The question is a purely theoretical one, and of no importance in a practical estimate of the wealth of the region. There is a little coal bed usually within 15 or 20 feet underneath the Pittsburgh bed; another little coal bed 50 or 60 feet beneath it; a third about 150 feet beneath it; a fourth 350 feet beneath it; and a fifth 450 feet beneath it, just over the Mahoning sandstone.

Another feature of the column of Barren measures is a deposit of red, variegated, and bluish sandy shales, 100 feet thick, underlying the Morgantown sandstone. Although the strongly red layers of this shale formation form but a moderate part of it they make a great mark upon the country, arresting the attention of travelers. Members of the Institute as they came from the East probably noticed these red shales where they are cut at the Pennsylvania Railroad summit, a few miles north of the city. In many parts of the region the red color is not so noticeable; but in the district immediately surrounding Pittsburgh the red soil is a marked feature in the landscape.‡

[TO BE CONTINUED.]

* The *Bakerstown sandstone*, 100 feet thick locally, makes the cliffs along the Ohio river, in Reserve township, Allegheny county. It lies but a few yards beneath the Crinoidal limestone.—(Q. 24, 165). The *Buffalo sandstone* makes huge cliffs along the streams in the country north of Pittsburgh. It is the upper member of the Mahoning sandstone.—(Q. 33, etc).

† *Productus*, *Hemipronites*, *Spirifer*, *Athyris*, *Lophophyllum*, *Zeacrinus;* and *Chonetes* and *Nautilus* locally (See K., p. 80).

‡ Three red shale horizons have been traced through Allegheny and Beaver counties—one 100 feet beneath the Pittsburgh coal; another beneath the Crinoidal limestone; a third, above the Mahoning sandstone.—(Q., pp. 306, 307).

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO MAY 31, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5,180
December	98,582	17 342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,353	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	82,711	97,516	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87 193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107 514	70,069	207,593	6,696
June	25,348	89.554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67 883	151,913	4,900
September	19,590	64,648	63,453	147,691	4.923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42 025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25.469	62,262	2,224
March	11,558	26,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,695	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2, 31
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71 459	2,305
Total May 31 '86	3,551 515	2,562,550	2 097,558	8,211,623	5,504

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district up to May 31, 1886. Cherry Grove has produced 3,551,515 barrels, Cooper 2,562,550, and Balltown 2,097,558 barrels. The daily average runs from the three fields during May were 2305 barrels, an increase of 542 barrels from the April figures.

The daily average runs from the Cooper and Henry's Mills section for May were 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, for January 623 barrels, for December 749 barrels, for November 707 barrels, for October 777 barrels, and for September 918 barrels.

The Balltown field had a daily average of 1376 barrels in May, 832 barrels in April, 1059 barrels in March, 1056 barrels in February, 1063 barrels in January, 1182 barrels in December, 1030 barrels in November, and 925 barrels in October. This increase in the runs of 544 barrels a day for May is due partly to increased production on the southwest extension, and partly to one of the producing firms backing up its oil at tanks for several months past. Cherry Grove averaged 338 barrels in May, 347 barrels in April, 353 barrels in March, 305 barrels in February, 306 barrels in January, 442 barrels in December, 303 barrels in November and 428 barrels during October.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to May 31, 1886, inclusive, has been 8,211,623 barrels, a total daily average of 5504 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
Septemb er	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270,644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239		
April	280,005	9,333		
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
January, 1886	39,933	1,288	138,549	4,469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108,541	3,618
May	37,752	1,218	100,994	3,258

For the thirteen months ending with May 31, the Cogley oil field has produced 1,279,499 barrels of oil, a daily average of 3358 barrels. The daily average for 350 days ending April 30, was 3367 barrels. Previous to May 15, 1885, Cogley oil was included with the general runs of the old Clarion field. The daily average for May is 360 barrels a day less than for April, while the April average was 229 barrels less than that for March. March declined 123 barrels a day from the February average, while February fell off 499 barrels from January, and January showed a decrease of 772 barrels a day when compared with December. The highest daily average for the Cogley field was attained last November, since which time there has been a drop of 2158 barrels a day in the runs. The Thorn Creek and Baldridge runs averaged 1218 barrels a day in May, 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January, 1420 barrels in December, 1469 barrels in November, 1898 barrels in October and 2021 barrels in September. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 600 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 31st of May had produced 209,576 barrels; a daily average for 243 days of 862 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April and 915 barrels a day in May.

The runs by the Southwest Pennsylvania Pipe Lines from the Washington field averaged 5393 barrels a day in May and 1734 barrels in April. The runs from the Shannopin or Shoustown field were 231 barrels a day in May.

THE PETROLEUM AGE,

DEVOTED TO THE

INTERESTS OF THE PETROLEUM TRADE.

PUBLISHED MONTHLY BY

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THE PRODUCING REGION.

At the beginning of May there were 247 new rigs and 356 drilling wells in the entire country, a total of 603. Ont of this nnmber 351 wells were completed, which on the last day of the month were estimated to have had a production of 11,588 barrels. The dry holes were 57 in number, leaving 294 productive wells, with an average yield of 39½ barrels each. During April the entire region completed 295 productive wells and 58 dry holes, and the average of the new wells April 30 was about 30 barrels. These figures show a decrease of 2 in completed wells and of 1 duster, while the new production is increased 2806 barrels. The increased production is again due to Washington and Kane. In May, 1885, 212 wells were completed, with a new production of 5478 barrels; the dnsters were 31 in number. At the close of May there were 186 new rigs, 137 old rigs and 407 drilling wells in the New York and Pennsylvania oil prodnc-ing regions; as compared with 247 new rigs, 140 old rigs and 356 drilling wells at the close of April.

No material additions have been made to the area of the prodncing fields during May. The decline in the production of the older sections of the producing regions is more than made good by the increased ontput of the new developments. The Kane field has established several outlying points that are considered definite limits to the boundaries of the district, while at Washington there still remains possibilities of further extension.

ALLEGANY FIELD.

The Allegany prodncer is slacking up in his efforts to compete in the production of cheap oil, as rapidly as circnmstances will admit. The same number of wells were completed in May as in April, while the estimated new production is 15 barrels less. But the dusters are 5 in number, against 3 for the month preceding, so that the average production of the new wells remains about the same, 6 barrels each. On the last day of May there were 22 new rigs, 47 old rigs and 27 drilling wells in the Allegany field, a total of 96, and an increase of 3 old rigs and a decrease of 7 drilling wells as compared with the report of April 30. Three of the dry holes were found in Wirt and two in Clarksville. Moore Bros. developed a good gas well on the Deyoe farm, lot 61, Wirt township, and the Cuba Gas Company struck another on the Ernhout farm, lot 20, Clarksville. The Allegany pipe line runs averaged 6535 barrels a day in May, 6895 barrels in April, 6545 barrels in March, 6361 barrels in Febrnary and 6235 barrels in January.

THE BRADFORD FIELD.

The Bradford field shows a decrease of 13 new rigs and 8 drilling wells as compared with last month, and there is a general disposition on the part of the larger companies to check active operations nntil the excitement at Washington and Kane is over. Forty-five wells were completed in May, including six dry holes, and the new production is rated at 335 barrels. This is a decrease of 7 wells and 47 barrels production from the figures for April. At the close of the month there were 17 new rigs, 36 old rigs and 40 drilling wells in the Bradford field. The ripple of excitement that lent a momentary interest to the section, south of Allegany village, has passed over, and two dry holes in May, make a total of five that have been drilled in the vicinity of the Conroy & Johnson well, with hope of finding an extensive area of oil producing territory in this part of the conntry. C. S. Whitney struck a good gasser on the Lewis Run tract up the East Branch, during the month; Waugh & Porter got a dry hole on the Watrous farm, in the same division of the field; Sawyer & Co. secured the same result on the McKeown farm, between Babcock and State Line, and the Royal Oil Company in their search for an extension of the Bradford field, toward Marshburg, found a rank duster on warrant 4907. The pipe line runs averaged 27,552 barrels a day in May, 28,640 barrels in April, 29,333 barrels in March, 27,499 barrels in February, and 27,966 barrels in January.

WARREN AND FOREST.

The Middle field completed 164 wells in May with a new production of 4989 barrels; the dry holes nnmbered 15. This is an increase of 24 wells and 1418 barrels production over April. Kane and Grand Valley snpply 86 of the whole number of wells and 4415 barrels of the new prodnction. The record of active operations shows 68 new rigs, 21 old rigs and 154 drilling wells in the Middle field on the 31st of May, as contrasted with 96 new rigs, 20 old rigs and 125 wells drilling on April 30.

KANE.—After the drilling of the month of June is done new operations in the slashings and under the hemlocks of the Kane field will be of slight import to the trade. The ontside wells added to the finished list in the past thirty days have failed to afford prospectors a glimpse of crude. The Merchants' Oil Company's ventnre, on warrant 3153, located to determine if a parallel streak existed to the eastward was a failure. Their well along the eastern boundary line of lot 379, and seventy rods from the sonthern, found salt water, but no oil. T. N. Barnsdall & Co.'s test, on the southeastern corner of lot 346, passed below the sand level without a display of crude of the mildest sort. The Hemlock Oil Company's experimental wells, on warrant 3132, located to catch the oleaginous streak if it had drifted on a 45 degree line to the northeast, were mystified for a time, but are now admitted by the owners to be dry. At the present writing, June 17th, they have a fishing job at C. H. Rathbun & Co.'s well on the southwestern part of lot 382. Porter, Gilmor & Quick's well, which finds a geographical position in the southeast corner of lot 418, was reported dry on the 16th of Jnne. It removes all chances of an extension to the westward, and shows that the line which hems the prolific territory on that side of the belt is regular and sharply defined. Mr. C. E. Goodwin, the lone scout remaining on Kane's breezy snmmit, takes a gauge of all wells in the field every Monday morning. According to his figures there were 150 wells in the field on the morning of June 14th producing 5090 barrels. On the 7th there were 132 wells with a production of 5605 barrels. The average daily pipe line runs from the Kane field for the month of May were 4475 barrels, and they are expected to be larger in June. During May 55 wells were finished having an estimated production on the last day of the month of 3828 barrels. Six of the wells completed were failures. While the field was practically outlined there was but a slight re-

duction in the number of wells drilling, and enough were in progress to more than maintain the production for the month of June. At the close of May there were 20 new rigs, 2 old ones and 69 wells drilling, a total of 91. The report of the previous month gave an aggregate of 94.

KINZUA VILLAGE.—Morse & Collins have the field to themselves on the west side of the river, where they have drilled three wells. No. 1 is reported as doing 50 barrels a day; No. 2, completed in May, started at 20 barrels; No. 3 is through the sand and doing 10 barrels a day. All are heavy gassers when first drilled into the sand and the steaming process has to be resorted to in order to make them produce oil. East of the river, on the flats, several good wells were completed in May, which being within the boundaries of defined territory are of little importance. J. E. Fogel & Co. are about starting a test well on the Richardson lands, along the south line of the Anchor Oil Company's property.

CLARENDON AND TIONA.—A premium of eight cents per barrel on Middle field oil, when crude rules below the seventy cent point, proves no longer an inducement to the Clarendon operators, and in consequence there is a marked decline in the activity that usually prevails in this section of the region. On the 30th of April there were 39 new rigs in the Clarendon and Tiona fields, and for the 31st of May the report shows but 18. The drilling wells number the same on both dates. The northern end of the field invites a little attention where the territory between the P. & E. R. R. and Stonehill affords some very fair wells. Southwest of Tiona the development is being prolonged through lot 284, on a direct north and south line. Some of the very best wells in the district are found on lot 284. The lots directly south, viz.: 324 and 321, have been picked up by Pickett & Stone, Winger and others and several wells now under way will soon test the value of the new addition to the productive area.

COOPER AND BALLTOWN.—No wells were completed in May in the Cooper district, and but one well was drilling at the close of the month, that of John Cochran, on lot 407. The pipe line runs averaged 591 barrels a day in May and very closely represents the production. Five wells were completed in the Balltown field in May, with a new production of 185 barrels. Three of the new wells are found on the southwest extension and started off at the good round pace, characteristic of the Balltown field in the earlier days. But one well is drilling, on 3195, in the northeastern part of the field, and the present activity is confined to the southwest prolongation.

GRAND VALLEY.—The Grand Valley field has enjoyed an unprecedented boom and wells have been drilled more quickly and more thickly than is warranted by the character and productivity of the oil-bearing rock. Dry holes and small wells west and north have established a few determining points for boundary lines on these two sides, but there still remains a few chances for an extension to the development on the east. The Boiles & Roberts well, at Newton Station, is yielding a small amount of oil, from what is generally believed to be the second sand, and it is evident that the field is not to extend thus far to the northeast on this line. The best wells in the field are found in the southwest on lots 186, 187, 196 and 197. Here Miller Bros. & Crippen, Fertig & Wood, L. B. Wood & Co., S. Stewart & Co., Benedict & Co., G. P. Kepler & Co., Tew Bros. & Gehm, Emery & Boyer, and a few others, have struck wells that have started pumping at 50 to 100 barrels for the first twenty-four hours. There is a wide extent of territory that is good for wells that will range from 5 to 15 barrels each; sucker rods are used at nearly all the wells, and the absence of gas makes the pumping process rather costly. There were 41 wells completed at Grand Valley in May, and on the last day of the month this district showed 24 rigs up and building and 31 drilling wells. The development of the field will be only slightly retarded by the low price of crude, but the greater part of the drilling will be done to protect lease lines.

THE LOWER COUNTRY.

The lower country, extending from Titusville on the north to the confines of Greene county on the south, and to the Ohio State line on the west, supplied 30 per cent. of the new wells in May, and over 50 per cent. of the new production. Washington alone with 7 productive wells is responsible for a yield of 4860 barrels—two-fifths of the total of the entire region. The lower country completed 108 wells last month; the dry holes were 31 in number and the production 6086 barrels. On the 31st of May the count showed 79 new rigs and 186 drilling wells as compared with 99 new rigs and 149 drilling wells April 30.

VENANGO.—This county shows a decline both in completed wells and work under way from the figures of the preceding month. The decrease amounts to 4 wells, 110 barrels new production and 11 rigs and drilling wells. Twelve wells were finished in the Red Valley district and 4 of them were dry. There is little of interest remaining in this section, as the half dozen wells drilling on the first of June are all within the limits of the pool and of no particular importance. By the liberal use of glycerine the production has been pretty well maintained; the pipe line runs having averaged as follows: January 783 barrels, February 1017, March 1206, April 1231, and May 1260 a day. The total runs for the field up to May 31st were 203,575 barrels.

In the Tarkill district there was nothing new developed until after May had made up her records. On the last day of May the Canning & Goettel well, on the Judge McCalmont farm, reached the sand and made a showing for a large well. When drilled through the sand it proved a producer of the 200-barrel order and started a boom for the western extension of the field. Lands at once rose in value in that direction and numerous new wells have been started in the vicinity of the Canning since the first of June. Nine wells were completed in the Tarkill district in May. The runs averaged 915 barrels a day in May, 764 in April, and 427 in March. The Venango field completed 47 wells in May, of which 15 were dusters. The new rigs on the last day of the month were 23, the old rigs 13 and the drilling wells 34.

CLARION.—The production of the Cogley district declined during May at a corresponding rate with the decrease in drilling operations. The torpedoing of the old wells is no longer able to sustain the production and the yield of the new wells completed is but a small amount compared with what it was when the field was held at a 5000 barrel gait. The average daily pipe line runs for May were 3258 barrels and the April average was 3618, a reduction of 360 barrels. In the month of May 18 wells were finished in the Clarion district, having a new production on the last day, of 147 barrels. One of the new wells finished was dry. At Shippenville Swartzfeger & Co finished a well on the Brenneman farm, which created a wave of excitement, and subsided as the well dwindled to a 20 barrel pumper.

BUTLER AND ARMSTRONG.—The old fields of Butler and Armstrong have afforded a number of interesting features since the appearance of the May AGE. On the

Piersol farm, near Reibold Station, Phillips Bros. completed a dry hole where a good well was confidently expected. It is located east of the Uniontown Oil Company's well, on the Critchlow farm, which is a 30-barrel producer. Craig & Cappeau's semi-wild-cat, on the Frederick farm, near Hume's Station, is a heavy gasser from the regular Butler gas sand. At the southeastern end of the Thorn Creek pool some work is under way on territory which was abandoned at the close of the Thorn Creek excitement. The well at Jefferson Centre, along the noted Thorn Creek, though small, has caused another to be started in that neighborhood. The Ort pool, east of Millerstown, which the trade had placed in the defined list, breaks out anew by making a progressive step of half a mile to the south, where the new well of Dennison & Fleegler, on the Miller farm, started at 150 barrels per day. Thompson, Brown & Huver's well, on the Mortland, which joins the Miller farm, is a fair producer. The well at Mars Station, on the P. & W. R. R., which was a small producer from the upper sands, was drilled to the fourth when an increase in salt water was found, but no improvement was made in the showing of oil. S. D. Bell & Co.'s well, at Craigville, is mystified by the owners, but no doubts are entertained of its dusty condition by producers acquainted in that section. Hooks Bros'. well, on the Washington farm, a rank wild-cat, also came in dry. During May 24 wells were completed having an estimated new production of 446 barrels on the last day of the month. Six of the wells were classed with the dusters. The monthly count showed 13 new rigs, 2 old ones and 39 wells drilling, a total of 54. The aggregate on the last of April was 61.

SHOUSTOWN, ETC.

The Shoustown field found some governing points for its border lines through the work of the drill during the past month. The speculations on the form which it will assume when the centre bit has marked its outlines no longer admit of a wide range. One thing is certain, as demonstrated by the failure on the McCoy farm, a half mile west of the Wallace, the producing field will not be fan shaped. The best well which has been completed in the field is the Raccoon Oil Company's No 2, on the Morrow farm, about sixty rods north of No. 1, on the same tract. After the well was packed it averaged for a number of days 192 barrels per day, and during the first two weeks of its producing career it put 2000 barrels of oil "in the line." W. L. Curtis & Co.'s venture, on the David McCallister farm, one mile north of the belt line, is a fair gasser, but did not show any oil. The Philadelphia Company's well, on the eastern part of the Gilmore farm, was too far east and south to catch the prolific streak. On the north side of the Ohio river, between Pittsburgh and Rochester, a number of test wells are being drilled. The well on the Dixmont Asylum grounds was down 1700 feet on the 23d of May and was being drilled deeper. At the same time the Kilbuck Oil Company's well was ready to start the drill on the J. H. Muller farm, along Kilbuck creek. The Union Oil Company are drilling a well on the Cook farm, southwest of the old well at Mount Nebo. Barton, Ackerly & Co. are drilling a well along Sewickly creek. Asa Say & Co. are sinking a well along Swamp creek, a branch of the Big Sewickly. J. M. Guffey & Co.'s test well, on the Simpson farm, ninety rods east of the Frederick, proved a fair gasser from the fourth sand. Their well on the Duncan was down between 1700 and 1800 feet on the 21st of May. In Marshall township, northeast from Shoustown, McGrew Bros. are drilling a well on the Brittenstein property. The new well drilled by the Economites, at Legionville, on the river, started on its producing career with a production of 15 barrels per day, and has already started a number of wells in its immediate vicinity.

WASHINGTON.

The Washington field rules the crude market and the developments of the gusher district have been of absorbing interest to the trade since the early days of May. About the middle of that month the drill penetrated the pay streaks of the sand at Barre, No. 1, and the well flowed at a rate which surprised the expectations of owners and field men. The lower or third pay streak at this well was reached on the afternoon of May 17th, and in its best twenty-four hours the well flowed 2400 barrels. The Barre, No. 1, struck the Gantz sand at 2207 feet and from the top of this sand the well flowed once each week. The second pay streak was tapped at 2241, just thirty-four feet from the top of the sand, and the lower or third pay streak was encountered at 2263 feet, or when fifty-six feet in the sand. The big oil came after two bits had been run which would make the depth in the sand about sixty-two feet. At the western end of the field there is a well defined layer of slate between the Gantz sand and fifty-foot, but at the eastern end this rock is missing and the two sands run together. In other words at the eastern end of the field the Gantz sand and fifty-foot are the same rock with a variable texture. At the Barre, No. 2, two locations south of the No. 1, the top of the Gantz sand was struck at 2282, and the first oil was discovered at 2290. Before the lower pay streak was opened up the well produced about 100 barrels daily, and from the bottom pay, which was tapped at 2358 feet, the well produced in the best twenty-four hours 1550 barrels. On the 22d day of May the drill had penetrated the sand at Willets, Young, Craig & Co.'s No. 1 well, on the Cameron farm, to a depth of sixty-three feet, and was then being rapidly dulled by a fine, white rock, almost free from grit, and which, when dry, could be blown by the wind like so much chalk. At this time the well was drilled seven feet below the level, where the Barre, No. 1, struck the lower pay streak, and it looked as if the well would remain a 50-barrel producer, from the upper portion of the rock. Late in the afternoon the rich spot in the sand was struck and the flagging hopes of owners and drillers rose with the column of oil which rolled out at the rate of 50 barrels per hour. The drill continued to vibrate on the following day, and on Sunday, May 23d, a two hours' gauge, ending at 10 p. m., gave an average of 197 barrels per hour. For the twenty-four hours ending on the morning of May 26th, the Cameron produced 2725 barrels. Its yield May 29th was 2500 barrels, and for the day ending June 12th it produced 1548 barrels. Willets, Young, Craig & Co.'s No. 3, on the Smith farm, having a location about fifty rods south of the Munhall well, was considered on doubtful territory, but when drilled into the sand it showed producing capabilities which placed it second on the list to the Cameron, No. 1. The lower pay streak was penetrated June 10th, and during that day frequent gauges showed a production of 130 barrels per hour. Its yield for the first twenty-four hours was 2890 barrels, and for the day ending June 12th, without being agitated since the pay streak was struck, it put 2527 barrels in the tanks. On the 15th of June it had declined to 1450 barrels. Vandergrift's No. 2, on the Hall farm, a half mile northwest of the Thayer, No. 2, proved a much larger well than was expected. The gauge of the field by the scouts for June 12th gave its twenty-four hours' production, ending at that time,

1560 barrels. The Union Oil Company's gusher, on the Taylor farm, was struck April 22d, and on the 12th of June was producing 675 barrels. The wells detailed above were the great gushers completed since the 1st of May, and there may be added to the list an equal number of dry holes. Northwest of the borough of Washington two important failures are located, which condemn territory. One was drilled by John L. McKinney & Co. & Robbins, on the southeastern corner of the Glenn farm, and the other by Munhall & Co., on the Humbert. Both are barren of oil in all sands. Meldrum & Sons' well, on the Byers' lot, southeast of these dusters, and nearly in line with them, had a small showing of oil in the upper sands, but is abandoned as a dry hole. At the northeastern end of the district Pew & Emerson have finished two dry holes. Their well on the R. D. Wylie farm, 120 rods northwest of the Smith, No. 1, was quite a heavy gasser from the Gantz sand, but failed to show any traces of crude, though drilled some distance below the Gordon rock. Their No. 2, on the Kountz farm, 120 rods northwest of producing wells, on the Munce farm, afforded its owners a dusty reward for an extravagant outlay. The Associated Producers' well, on the Reed farm, at Wyland Station, on the B. & O. R. R., about four miles northeast of the Smith, is known to be below the level of the producing sands and dry. A line drawn through the Pew & Emerson dusters, on the Wylie and Kountz farms, will intersect one drawn through the dry holes on the Glenn and Humbert farms, near the Byers' lot failure, and form an angle greater than a right angle. These two lines cut off and seal the dusty fate of a large amount of territory which was considered good when the Smith, No. 1, first made her bow to the producing world. More gushers are sure to be found at the eastern end of the field on lands owned by John McKeown, and possibly on farms south of the Barre and east of the Cameron. The sand is thickening to the south from the Barre 1, and the oil is found deeper in the rock. The western end of the field does not look dangerous to THE PETROLEUM AGE scribe, even with the Hall, No. 2, a 1500 barrel well.

The following is a list of the wells producing in the field on the 12th day of June, with the production for the twenty-four hours ending on that day:

Farm.	Operator.	Barrels.
Gordon,	P. L. & H. Co., No. 1	60
"	" No. 2	6
"	" No. 4	180
Hess,	" No. 2	27
Gantz,	Citizens' Oil and Gas Co., No. 1	30
Weaver,	" No. 3	10
Weirich,	Vandergrift, No. 1	35
"	" No. 2	not producing
Barre,	" No. 1	650
"	" No. 2	525
Hall,	" No. 1	20
"	" No 2	1560
Taylor,	Union Oil Co., No. 1	675
McGovern,	" No. 1	28
Weirich,	Coast & Co., No. 1	15
Hayes.	" No. 1	8
Lead Works Lot,	McKeever & Mulholland, No. 1	15
"	Marsh & Caldwell, No. 1	14
Smith,	Willets, Young, Craig & Co., No. 1	277
"	" " No. 3	2527
Cameron,	" " No. 1	1548
Shirls,	Shirls, No. 1	53
Miller,	Guffey & Co., No. 1	48
Manifold,	Pew & Emerson, No. 1	360
Gabby,	" No. 1	5
Clark,	Thayer, No. 1	104
"	" No. 2	744
Munce,	Willets, No 1	650
"	" No. 2	2
"	" No. 3	500
"	" No. 4	50
"	" No. 5	150
Montgomery,	Niagara Oil Co., No. 1	5
Clark,	Hallam & Co., No. 1	5
Wylie,	Munhall & Co., No. 1	40
Wells	35 Production	10,926

The average daily pipe line runs from the field for May were 5393 barrels, an increase of 3663 barrels over the April average. Ten wells were completed in the field during May having an estimated new production on the last day of the month of 4860 barrels. At the close of the month there were 21 new rigs, 8 old ones and 63 wells drilling, a total of 92. The aggregate at the close of the previous month was 72.

Crude Market for May.

The record of the crude market for May shows still greater effects of the newly discovered petroleum deposits of Kane and Washington. The gushers of the latter pool have proved almost as disastrous to the price of crude certificates as its earlier prototype, Cherry Grove. Its outlines are carefully watched by producers and dealers, and as its productive limits are slowly determined, without some other new discoveries are brought to light, the market must exhibit greater strength. Everyone recognizes the fact that crude oil at present prices is a very cheap commodity, and that it is only a question of time and storage when it will bring a better figure. The Lima field presents great possibilities of supply for the future, but the quality of its oil will mitigate against its proving a powerful competitor with the Pennsylvania product. It is reported that above 15,000 barrels of the sulphurous compound, are already stored in tanks at the Lima wells, for which it is difficult to find a purchaser at fifty cents a barrel.

The month of May begun with fairly firm quotations of 73¼c in all the Exchanges. For the first seventeen days the market ranged between 74⅝c and 71⅛c. On the morning of the 18th came the news that Barre, No. 1, (Vandergrift) was flowing at a 2000 barrel rate, and later in the day, that Craig & Lowrie, who had been engineering a bull movement in Pittsburgh, were unable to meet their obligations. The market immediately sold off to 65c, from which point it recovered to 69c the day following. It again fell off and on Saturday the 24th closed at 67¼c. Sunday the 23d the great Cameron gusher was heard from, and on the Monday following the market opened at 65¼c to 66⅜c and broke to 62⅞c. There was a small reaction to 65⅜c, after this, but on the 29th, while the Western Exchanges were observing Decoration Day as a general holiday in Pennsylvania, New York held an open market, and prices touched 62c, the lowest point of the month. The highest price for the month was reached on the 8th, when 74⅝c was bid at Oil City and New York. May closed with crude oil quoted at 62¼c to 62½c. The lowest quotation for April was 70⅞c and the highest 78⅜c.

The range of prices for May was 12⅝c as compared with 7½c in April, 9½c, in March, 9⅞c in February, 10½c in January, 8⅜c in December, 23⅞c in November and 12½c in October. The average price on the floor of the Bradford Exchange was 69⅞c in May, against 74c in April, 77⅛c in March, 80c in February, 88¼c in January, 89⅝c in December, 104⅜c in November, and 105½c in October. The average price for May one year ago was 79⅝c.

THE CLEARANCES.

	May. Barrels.	April. Barrels.
Bradford Oil Exchange	33,159,000	36,734,000
Oil City "	83,700,000	94,302,000
New York Consolidated Exchange	180,354,000	187,607,000
Pittsburgh Petroleum Exchange	61,201,000	66,216,000
Philadelphia Oil Exchange	15,695,000	16,123,000
Total	374,109,000	400,982,000

OPPERMAN'S Middle Field pocket maps for sale at AGE office.

BLUE print maps of the various oil fields to be had at the AGE office, price one dollar each.

AVERAGE DAILY RUNS BY DISTRICTS, INCLUDING MACKSBURG—1882–86.

	Bradford	Allegany	Cherry Grove	Cooper	Balltown	Wardwell	Baldridge	Cogley	Macksburg	Kane	Washington	All Other Fields	Total
1882.													
January	55,006	7,222	----	----	----	----	----	----	----	----	----	11,541	73,769
February	63,313	9,512	----	----	----	----	----	----	----	----	----	10,722	83,547
March	58,078	14,760	----	----	----	----	----	----	----	----	----	10,894	83,732
April	53,108	17,622	----	----	----	----	----	----	----	----	----	10,395	81,125
May	55,955	19,522	218	----	----	----	----	----	----	----	----	11,262	86,957
June	56,016	22,765	3,037	----	----	----	----	----	----	----	----	13,968	95,786
July	52,456	23,884	8,655	----	----	----	----	----	----	----	----	19,311	104,306
August	49,711	20,814	24,315	----	----	----	----	----	----	----	----	10,985	105,825
Septem	46'585	16,387	23,002	----	----	----	----	----	----	----	----	10,567	96,541
October	42,107	19,964	9,363	120	----	----	----	----	----	----	----	14,286	85,840
Novem	41,404	16,993	4,886	294	----	----	----	----	----	----	----	10,012	74,589
Decem	39,580	14,020	3,180	558	87	----	----	----	----	----	----	14,993	72,419
1883.													
January	36,487	14,106	3,313	1,632	334	----	----	----	----	----	----	8,893	65,125
February	38,481	13,154	2,954	1,475	332	----	----	----	----	----	----	8,812	65,208
March	37,754	12,619	2,706	1,737	368	----	----	----	----	----	----	9,220	64,404
April	38,810	13,742	2,604	3,802	840	----	----	----	----	----	----	9,409	69,207
May	39,039	13,793	,2207	3,829	952	----	----	----	----	----	----	9,625	69,445
June	38,614	13,499	2,215	4,199	1,961	----	----	----	----	----	----	9,955	70,443
July	36,489	12,381	1,891	3,467	1,944	----	----	----	----	----	----	9 456	65,628
August	37,165	12,743	1,935	3,166	3,078	----	----	----	----	----	----	10,790	68,877
Septem	35,894	12,358	1,612	3,200	3,723	----	----	----	----	----	----	9 423	66,210
October	35,654	12,757	1,312	3,314	4 298	----	----	----	----	----	----	10,314	67,649
Novem	34,516	12,332	1,000	3,251	3,807	----	----	----	----	----	----	10,285	65,281
Decem	32,650	11,752	1,061	2,876	3,766	----	----	----	----	----	----	10,725	62,830
1884.													
January	31,020	11,018	767	2,908	2,808	----	----	----	86	----	----	9,657	58,264
February	33,987	12,025	968	3,743	2,816	----	----	----	51	----	----	11,034	64,624
March	33,049	11,777	1.001	4,631	2,813	----	----	----	86	----	----	11,319	64,676
April	34,370	12,261	1,039	4,229	2,399	475	844	----	113	----	----	10,176	65,906
May	34,946	12,193	968	3,468	2,260	1,015	1,061	----	136	----	----	10,777	66,824
June	35,701	11,672	845	2,985	2,250	2,042	969	----	211	----	----	10,886	67,561
July	34,718	11,114	523	2,476	2,471	4,277	889	----	249	----	----	10,234	66,951
August	33,782	10,384	665	2,046	2,189	6,483	843	----	258	----	----	10,674	67,254
Septem	33,449	9,989	653	2,155	2,115	4,056	2,644	----	334	----	----	10,891	66,286
October	31,500	8,802	446	1,811	1,781	2,201	6,034	----	350	----	----	10,489	63,414
Novem	29,552	8,642	423	1,302	1,401	1,346	9,493	----	431	----	----	9,592	62,182
Decem	30,632	8,193	407	1,246	1,189	979	8,730	----	315	----	----	10,367	62,058
1885.													
January	27,254	7,442	360	1.214	810	977	6,199	----	384	----	----	9,034	53,674
February	27,480	7,696	327	987	910	663	7,349	----	637	----	----	9,564	55,613
March	26,833	7,342	373	867	954	605	7,239	----	873	----	----	9,885	54,971
April	29,557	7,738	299	1,114	775	527	9,333	----	1,189	----	----	11,019	61,551
May	28,443	7,467	343	1,053	902	722	7,488	127	1,557	----	----	10,879	58,981
June	30,662	7,680	439	1,000	1,044	764	5,905	609	2,233	----	----	11,983	62,319
July	30,657	7,363	467	906	1,032	647	3,856	1.220	2,441	----	----	10,283	59,872
August	29,291	7,102	363	923	930	----	2,268	2,115	2,382	----	----	12,731	58,105
Septem	30,151	6,647	312	918	944	----	2,921	3,244	2,270	----	----	13,830	60,337
October	30,828	7,081	428	777	925	----	1,898	4,9 9	2,053	----	----	14,194	63,123
Novem	29,117	6,667	303	707	1,030	----	1,469	5,416	2,031	----	----	14,162	60,902
Decem	30,376	6,738	442	749	1,182	----	1,420	5,241	1,971	96	----	14,054	63,269
1886.													
January	27,966	6,235	306	623	1,063	----	1,288	4,469	1,768	70	----	14,398	58,186
February	27,499	6,361	305	571	1,056	----	1,218	3,969	1,775	435	497	14,552	58,238
March	29,333	6,545	353	653	1,059	----	1,369	3,847	1,897	1,252	900	16,247	63,455
April	28,640	6,895	347	583	832	----	1,299	3,618	2,138	3,017	1,734	17,263	66,366
May	27,552	6,535	338	591	1,376	----	1,218	3,258	1,890	4,475	5,397	17,862	70,492

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for May, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of May		1,291,083.85
Quantity of crude petroleum at close of May	1,452,286.18	
Less sediment and surplus	174,512.50	
		1,277,773.68
Receipts during May		181,134.21
Deliveries during May—to refiners	190,714 46	
" " " to other parties	--------	190,714.46
Outstanding certificates, accepted orders, etc.		767,000 00
Credit balances		510,773.68
Total liabilities, May 31, 1886		1,277,773.68

APRIL SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of April		1,304,334.87
Quantity of crude petroleum at close of Apr.	1,456,335.04	
Less sediment and surplus	165,251.19	
		1,291,083.85
Receipts during April		187,322.02
Deliveries during April—to refiners	197,205.28	
" " " to other parties	--------	197,205.28
Outstanding certificates, accepted orders, etc.		764,000.00
Credit balances		527,083.85
Total liabilities April 30, 1886		1,291,083.85

THE total exports of petroleum from America, in gallons, according to a German circular, from January 1 to May 14, have been as follows:

	1886.	1885.
To Europe	117,627,555	116,827,300
To East Indies, etc	59,369,750	42,836,320
Total	176,997,305	159,663,620

SUMMARY of the Statements of the National Transit Company for May and April:

	MAY. Barrels.	APRIL. Barrels.
Receipts from all sources	1,749,417.47	1,656,873.95
Deliveries	1,692,943.26	1,824,561.17
Gross stocks end of month	34,503,938.55	34,436,708.69
Sediment and surplus	3,325,993.73	3,307,177.65
Total liabilities end of month	31,177,944.82	31,129.531.04
Outstanding acceptances	25,570,037,53	25,679,037.53
Credit balances	5,607,907.29	5,450,493.51

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111½	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅜	69⅞
June	68⅜	100¼	81	54½	117¼	68¾	82¼	-----
July	69⅞	101¼	76½	57⅝	108	63½	96⅜	-----
August	67¼	90¾	78⅔	58⅔	108⅔	81 1-5	100⅜	-----
September	69¼	95½	92¼	71⅓	112½	78	100¾	-----
October	88⅛	96¾	92¾	93⅜	111⅛	71	105½	-----
November	105⅜	91¼	82⅛	114¾	114 4-5	72½	104⅜	-----
December	113¼	92⅜	83¾	95¼	114⅓	74⅜	89⅝	-----

POCKET maps of Warren county on sale at AGE office.

MAY OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN MAY, 1886.

Allegany Field.

Twp. Owner Barrels.

Scio, 51, (E J Norton) Duke & Norton Oil Co No 64 8
Alma, 2, H L McMullan & Co No 15 6
" 19, (Allen) Duke & Norton No 67 4
" 21, (Noble) E G Rogers & Co No 7 4
" 37, Perrin & Young No 11 6
" 78, Rathbun & Backer No 5 4
" 86, Shirley & Hochstetter No 11 5
" 125, Duke & Rauber No 1 4
Wirt, 47, (R Mulkin) Applebee & Mix No 1 .... dry
" 48, (Church) Nile Oil Co No 1 4
" 48, (Hicks) Chas Phillips No 5 .... dry
" 52, (Burdick) Wilson Bros & Ackerly No 12 8
" 55, (Voorhees) Applebee & Mix 3
" 59, (Labar) Reynolds & Co No 3 10
" 60, (A Jordan) Lester, Jordan & Co No 3 5
" 61, (Goodell) C Phillips No 1 15
" 61, DeYoe) Moore Bros No 1 .... gas
" —, (Nichols) Barton & Hammond No 1 .... dry
Bolivar, 13, A C Hawkins No 1 5
" 36, Kilbury & Co No 1 3
Genesee, 7, Elsessor & Barmore No 5 4
" 24, Emery Oil Co No 10 5
Clarksville, 3, (Mills) Chas Phillips No 2 3
" 5, (Wetherby) Harris, Johnson & Co No 2 10
" 5, " " " No 3 10
" 5, " " " No 4 10
" 5, (Wetherby) Congden & Warner No 3 4
" 6, (Hamilton) Aekerly, Barton & Co No 17 5
" 11, (Congdon) Ackerly, Barton & Co No 18 5
" 10, (Swartwout) Angell Oil Co No 10 10
" 10, " " No 15 10
" 20, (McDougal) Love & Patterson No 2 5
" 20, (Ernhout) Cuba Gas Co No 2 .... gas
" 28, (Butts) M Finegan No 7 3

Wells completed 34
Production 178
Dry 5

Bradford Field.

East and West Branches.

Dent, Whitney & Wheeler No 44 8
Lewis Run Tract, C S Whitney No 9 (for gas) .... gas
Watrous, Waugh & Porter No 2 .... dry
Warrant 2268, R J Straight No 18 8
Warrant 2258, Van Vleek & Mitchell No 36 10
Whitney & W, S G Elliott No 3 6
Cutting, Bovaird & Co No 4 6
Clark, P C L & P Co No 7 10
McKeown, Sawyer & Co No 1 .... dry
Quintuple, 11, Camp & Zane No 13 8
" 139, Booth Bros No 3 8

Kendall Creek.

Lafferty, Van Vleck & Gifford No 51 10
" " " No 52 10

Knapp's Creek.

Middaugh, A C Hawkins No 9 6
Bauehs, Martin & Co 3
Ellis, Dr Christman 3
Rixford, Alfred & Co No 1 3
Dimick, Elder Bennett No 2 3
Atwater, Stewart & Canan 8
Boot Leg, Cal Robinson No 10 8
Keating, Forest Oil Co No 53 10

Foster Brook.

E T Co, Kervin & Co No 9 6
C B & H, Bulger & Dana No 4 6
" Burns & Monroe No 7 6
" Mosier Bros No 9 6
" lot 53, Fitzgibbons & Evans No 4 6
" J Stettheimer No 6 6
" Hackett & Hutchinson No 1 6
" H McCallister 6

Four-Mile.

Van Campen, Jas K Van Campen No 2 8

Indian Creek.

Weston, J L McKinney & Co No 6 8
" " 8
" Ernst, Perrin & Ramsey No 4 8
" Murphy, Hogan & Williams No 8 8
" " No 9 8
Shattuck, Bussell & Johnson No 1 8
" Wm W Brown No 7 8

Cole Creek.

Bing'm lot, 497, Union Oil Co No 3 15
" 585, Ass Producers Co No 58 50

Kinzua.

Warrant 3076, Union Oil Co No 62 5
" 3076, " No 65 15
" 2243, Emery Oil Co No 48 10

Miscellaneous.

Warrant 4907, Royal Oil Co .... dry
J Riehler, Smart Aleek O I Co No 1 .... dry
Sub 9, Range 9, Stevens Bros .... dry

Wells completed 45
Production 335
Dry 6

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

English, Graveyard Oil Co 20
Weed, Morse & Collins No 2 10
Rollins, Anchor Oil Co No 5 15
Marsh, Phillips & Co No 8 10

Warren, etc.

Wardwell, (2958) Benedict & Rockwell No 35 5
" " " No 36 5
Hemlock, P M Smith & Co No 1 8
Roy, James Roy 6
North Warren (Berry) C A Martin & Co. .... dry

Wells completed 9
Production 79
Dry 1

Clarendon.

35, (Mooney) Bell & Hazeltine No 8 6
35, Murphy & Hennessey 5
35, J Smith & Son No 5 6
54, O W Beatty & Bro No 44 6
8', D J Thayer No 14 6
80, Johnson Irvine No 7 5
105, Hackett & Shirley No 4 3
107, W B Roberts & Son No 17 6
162, O'Donnell & Tait No 1 3
162, Goal Bros & Co No 1 3
162, " No 2 3
497, Fred Hue No 3 5
463, Maginnis No 6 5
463, Neill & Lammers No 5 6
464, D Riddlesperger No 2 8
464, " No 3 8
464, M Matson No 1 8
463, J B McElwaine No 7 5
463, " No 8 6
463, Wm O'Niell & Co No 3 5
495, Conley Bros No 6 6
464, Columbia Oil Co No 21 8
527, F H Rockwell & Co No 23 6
531, S Short & Son No 1 5
531, Keegan, Sage & Co No 1 5

Wells completed 25
Production 138
Dry 0

Tiona.

81, Fertig, McKinney & Co No 3 6
81, " No 6 6
103, (lot 15) " 7
109, J W Sherman No 9 8
160, Gilbert Oil Co No 34 6
160, O'Donnell & Tobias No 7 7
161, " No 12 6
201, Wesley Chambers No 9 8
201, " No 10 8
202, Mandell Oil Co No 13 5
205, Smith, Bright & Co No 5 6
240, T Farnsworth No 1 2
241, L Kracer & Co No 24 8
241, " No 25 8
244, Horton, Crary & Co No 8 7
244, " No 9 8
244, " No 14 8
245, Shoelkopf, Horton & Co No 6 8
281, Horton, Crary & Co No 6 6
284, Watson & Mitchell No 7 8
284, Hackett & Shirley No 4 6
284, Anchor Oil Co No 5 8
284, " No 6 8
284, Pickett & Stone No 3 8
284, " No 4 8

Wells completed 25
Production 172
Dry 0

Balltown.

3194, Porcupine Oil Co No 38 80
5214, Anchor Oil Co No 1 40
5215, May, Kelley & Grandin No 48 50
5215, " No 50 60
3191, Proper Reserve Oil Co 5

Wells completed 5
Production 185
Dry 0

Kane.

345, Clinton & Swaine 8
346, T N Barnsdall .... dry
379, R B Stone .... dry
384, F W Andrews & Co est 50
384, Shirley, Hochstetter & Co 90
385, Howe, Lavens & Co No 1 75
385, " No 2 75
385, " No 3 75
386, Markham, Weston & Rose est 40
419, The Union Oil Co No 2 125
419, " No 3 125
419, " No 5 100
419, " No 6 est 75
420, Kane Oil Co No 21 125
420, " No 22 125
420, " No 23 100
420, " No 24 125
420, Coast, Sons & Co No 3 125
420, " No 4 125
420, " No 5 100
420, " No 6 50
420, Coast, Thyng & Co No 9 65
420, " No 13 125
420, " No 17 150
420, " No 19 150
420, " No 20 150
420, " No 21 125
421, Mallory & Co No 3 75
421, " No 4 80
421, P T & W C Kennedy No 1 60
421, Shirley & Hochstetter No 1 75
424, " No 5 60
425, Union Oil Co No 20 75
425, " " 21 40
425, " " 22 75
425, " " 23 80
426, Kane Oil Co " 7 85
426, " " 10 85
426, " " 11 85
3132, Hemlock O I Co No 1 .... dry
3132, " No 2 .... dry
3153, Merchants Oil Co .... dry
3767, Craig & Cappeau No 5 .... gas
3767, " No 12 60
3767, " No 18 65
3767, " No 21 60
3767, Ass'd Producers, Craig & Cappeau No 4 85
3767, Finnegan & Monroe No 3 80
3767, Ray & Archer No 1 50
3767, " No 2 50
3775, lot 12, P T & W C Kennedy No 5 25
3775, " No 6 20
3775, " No 8 25
3775, Andrews No 4 est 25
3775, John T Griffith est 30

Wells completed 55
Production 8828
Dry 6

Grand Valley.

186, L B Wood & Co No 7 15
186, " No 8 15
186, " No 9 20
196, " No 1 20
196, " No 2 10
186, W B Benedict & Co No 4 10
186, " No 5 20
196, " No 2 15
186, (Merritt) Miller & Crippens No 2 25
186, " " No 3 10
186, " " No 4 20
186, " " No 5 20
196, (Peterson) " No 2 20
186, (Campbell) Holman & Hopkins No 3 10
186, " " No 4 15
185, (Nason) D Emery & Boyer No 1 20
185, Mead, Beatty & Co No 1 5
187, (Zane) Grand Valley Oil Co No 1 20
187, " " No 2 20
186, S W Stewart No 3 35
186, " No 4 10
196, Groves Bros No 1 15
196, " No 2 15
197, Hazeltine & Bell No 1 10
197, Tew Bros & Co No 1 25
189, Morgan & Mull .... dry
J Hunter, H P Boyd & Co No 2 15
" " No 3 15
" Jos Millison No 2 12
" " No 3 20
Goodwell, Bovee & Duck No 1 15
" " No 2 20
Carpenter, W J Jackson & Co No 3 20
Emerson, Benson & Co No 2 15
Lot 196, W W Hague No 2 10
C H Ames, Daniels & Co No 2 5
Drake Pet Co, G P Kepler No 8 25
Reno Oil Co, Reno Oil Co No 3 .... dry
Newton (347), Boiles & Roberts est 5

198, F W Mitchell ..... dry
98, (McIntyre) Duncan & Braunschweiger ..... dry

Wells completed 41
Production 587
Dry 4

Miscellaneous.

McKean 232, Pennsylvania Gas Co ..... gas
Elk county, Grant & Horton ..... dry
" Short, Dunham & Co ..... dry
Forest 3671, Clark & Hughes ..... dry

Wells completed 4
Production 0
Dry 4

Lower Country.

Venango and Other Sections.

Farm.	Operator.	Barrels.
Benninghoff,	Oil City Fuel Supply Co No 1	gas
"	" No 2	gas
"	" No 3	gas
W Ecke,	"	gas
Cooperstown, B F Brundred		8
Chas Lake, Loots & Co No 3		2
Cope, Laughlin & Co		3
Kirkwood, J Kirkwood		10
" "		8
Pioneer, Davis		5
Kaufman, A P Dale & Co No 1		4
Cornplanter (Winger)	Sheasley & Galbraith	dry
Slab Furnace, H M Davis		3
McCandloss, J H McCandless		8
——, Smith & Co		5
Columbia, Columbia Oil Co No 166		10

Tarkill.

Farm.	Operator.	Barrels.
Fox, Taylor, Torrey & Murphy No 8		dry
A Hill,	" No 14	50
Webb,	" No 15	20
"	" No 16	50
Benton, Benton Oil Co No 3		40
" " No 4		75
Lawley, Cornwall & Hasson No 3		20
Alex Hill, Duncan & Fisher No 2		30
" Holt & Dorrington No 1		10
Martin, McKeever & Flynn		dry
Linn, Chas Linn & Co		dry

Bullion.

Farm.	Operator.	Barrels.
Porter, Porter Bros		7
McMillan, Farmers Oil Co		dry
Taylor, McElree & Co		dry

Rockland or Red Valley.

Farm.	Operator.	Barrels.
Bell, Dale, Fisher & Co		dry
R Porter, Flynn Bros & Co No 9		10
D Porter, Goodrich & Salisbury No 8		20
Wicks, W H H Piper No 10		15
" " No 11		10
Hetzler, Rider & Co No 2		25
" Gibson & Co		2
Cox, Forest Oil Co No 5		3
Johnson, Leckey & Foster No 8		10
Batten, Bowon & Co		10
Gates, Morton & Fuller		dry
Glenn, Wilson & Smith		gas

Vicinity Emlenton.

Farm.	Operator.	Barrels.
Elder, Wilson Bros		dry
Robert Grant, Bennett & Allen		dry
Seizel tract, Thomas & Jamieson No 6		20
J W Smith, Sheasley & Comstock No 7		10
Jones, Stevens & Co		4

Wells completed 47
Production 510
Dry 15

Clarion.

Cogley Run.

Farm.	Operator.	Barrels.
W L Hess, Morrison No 7 est		5
Beals, Korner & Co No 2		5
" Beals, Hunter & Co No 9		3
John Henel, Koch Oil Co No 7		5
J Miller, Shaffer & Sheasley No 2		20
Catherman, Shreffler & Co No 1		5
Berlin, Berlin & Son		8
Shreffler, S Y Ramage No 5 est		20
" Hall & Co No 3		15
Widow Deitrich, Pagett & Co No 2		10
Heeter, Hulings No 4		4
W Mong, Whitehill & Chambers No 4		2
W N Wilson, Kale & Co		10
Brenneman, Swartzfeger est		20
Banner, Banner Bros		5
McCummings, Oakshade Oil Co No 2		8
Berlin, Berlin & Son		2
Perry twp, Oliver Miller, Dale Bros		dry

Wells completed 18
Production 147
Dry 1

Butler and Armstrong.

Farm.	Operator.	Barrels.
Barnhart, Westerman & Pontius No 4		75
" " No 5		75
Dulity, Ireland & Hughes No 4		50
" Glenn, McCafferty & Co		30
Frederick, Jacob Frederick Oil Co No 2		35
Black, Campbell & McBride est		15
" Forquer Bros & Co No 1		15
Rupert, Leidecker & Crouse		dry
McElroy, Kittanning Co		dry
Jefferson twp, Extension Oil Co		5
Goehring, Boyd & Semple		dry
Smith, Colbert & Co		10
C Mechlin, Phillips Bros		3
Worthington, Hooks Bros		dry
Critchlow, Uniontown Oil Co		30
Renfrew, White & Co No 3		10
Rider, Hoover, Bronson & Co		dry
Titley, Titley Bros No 6		40

Martinsburg.

Farm.	Operator.	Barrels.
D P Kelley, Brawley Bros		6
John Kelley, Kelley & Co		12
Thos W Kelley, Conley Oil Co		15
R H Campbell, Campbell & Yonker		10
Stevenson, Stevenson & Bowser		dry
Kelley, Jordan & Klingler		10

Wells completed 24
Production 446
Dry 6

Washington.

Farm.	Operator.	Barrels.
Gordon, P L & H Co No 4		250
Barre, Vandergrifts No 1		1000
" " No 2		625
Cameron, Willets, Young, Craig & Co No 1		2250
Munce, I Willets No 3		625
" " No 5		110
Wylie, Pew & Emerson No 1		dry
Glenn, McKinney & Co & Robbins		dry
Clark, Hallam & Co		20
Humbert, Wm Munhall & Co		dry

Wells completed 10
Production 4860
Dry 3

Miscellaneous.

Farm.	Operator.	Barrels.
McGee, Shirley & Hochstetter		gas
Simpson, J M Guffey & Co & J L McKinney & Co		gas
McCoy (Douds) Raccoon Oil Co		dry
" Kriess, "		dry
Morrow, " No 2		100
Gilmore, Philadelphia Co		dry
Georgetown, Boyd & Semple		8
Legionville, Economites		15
McCallister, W L Custer & Co		dry

Wells completed 9
Production 128
Dry 6

DRILLING WELLS.

RIGS UP AND BUILDING MAY 31, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
3,	Coyle & Simon (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old)	rig
51,	Duke & Norton No 65	100

New rigs 0
Old rigs 4
Drilling 1
Total 5

Alma.

Lot.	Owner.	Depth.
3,	M J McMullan & Co No 5 (old)	rig
3,	Mackin & Breckenridge No 14	rig
23,	Vance & Horton (old)	2 rigs
24,	W F Jones (old)	rig
26,	Willetts & Elliott (old)	rig
28,	F N Whitcomb No 2 (old)	rig
37,	(Randall) E F Willetts No 3	drilling
37,	" " No 4	rig
37,	A A Almy No 2	drilling
37,	Perrin & Young No 14	drilling
38,	Koch Bros No 9 (old)	rig
51,	Sawyer & Co (old)	rig
86,	Shirley & Hochstetter No 12	drilling
106,	"	rig
107,	" No 9 (old)	rig
86,	Brown & Thornton No 4	drilling
86,	" " No 5	rig
88,	Duke & Co (old)	rig
120,	McCalmont Oil Co No 10 (old)	rig
142,	Dean & Smith No 5 (old)	rig

New rigs 4
Old rigs 12
Drilling 5
Total 21

Wirt.

Lot.	Owner.	Depth.
1,	(Riley Allen) Emp Gas & Fuel Co No 2 (old)	rig
34,	(Drum) W R Cook & Co No 3	drilling
47,	(Voorhees) Applebee & Mix No 2	rig
47,	(Johnson) Nile Oil Co	rig
48,	(Howard) " No 1	drilling
48,	(Hicks) Chas Phillips No 6	drilling
48,	(Church) Wirt Petroleum Co No 1	sand
55,	(R Mulkins) " No 5	rig
52,	(Burdick) Wilson Bros & Ackerly No 13	1400
55,	(R Mulkins) P M Shannon & Co No 2 (old)	rig
55,	(Orson Witter) " No 1 (old)	rig
59,	(Carnahan) Dow & Barnsdall No 2	drilling
59,	(Lahar) Reynolds & Co No 4	rig
60,	(Alvah Jordan) J H Snow No 6 (old)	rig
61,	(I Jordan) Ackerly, Barton & Co (old)	rig
61,	(Isaiah Jordan) Lester, Jordan & Co No 6 (old)	rig
61,	" " No 7 (old)	rig
61,	(Goodell) C Phillips No 2	drilling
61,	(Marsball) Limekiln Club No 2	sand
62,	" " No 3	rig
62,	(Peterson) " No 4	rig bldg
62,	" Barton, Hammond & O'Neil No 2 (fishing	700
62,	" " No 3	rig bldg

New rigs 7
Old rigs and shut down 7
Drilling 9
Total 23

Bolivar.

Lot.	Owner.	Depth.
12,	Wood & Co (old)	rig
23,	F C Streeter & Co No 12 (old)	rig
23,	Irwin & Morgan No 8	drilling
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig
31,	W B Irvin No 10	drilling

New rigs 0
Old rigs 4
Drilling 2
Total 6

Genesee.

Lot.	Owner.	Depth.
11,	(Little Genesee) Emp Gas & Fuel Co Limited (for gas) (old)	rig
14,	Merwin (old)	rig
22,	1 Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
22,	" No 19 (old)	rig
23,	Coughlin (old)	rig
29,	William Cranston (old)	rig
38,	S E Young (old)	rig

New rigs 0
Old rigs 11
Drilling 0
Total 11

Clarksville.

Lot.	Owner.	Depth.
3,	(Alvah Jordan) A B Cottrell No 3	rig
3,	(M Jordan) M Jordan No 1 (old)	rig
3,	(A Jordan) Angell Oil Co No 1	rig
10,	(Swartwout) " No 13	rig bldg
10,	" " No 14	drilling
10,	" " No 16 (old)	rig
11,	(Keller) " No 9	drilling
11,	" " No 2	rig
5,	(Wetherby) Steele & Werthman No 2	500
5,	" " No 3	rig bldg
5,	" Congdon & Warner No 4	rig
5,	" Harris, Johnson & Co No 5	sand
5,	" " No 6	drilling
5,	" " No 7	rig
5,	" " No 8	rig bldg
5,	(Jordan) Cuba Gas Co (for gas)	rig bldg
6,	(Seever) Ackerly, Barton & Co No 9 (old)	rig
13,	(Wixon) " No 3 (old)	rig
20	(Kernhout) " No 6 (old)	rig
20,	" " No 23 (old)	rig
9,	Henston & Brecht No 4 (old)	rig
9,	Merritt (old)	rig
9,	Whipple & Davis	drilling
13,	(Congdon) M M Congdon No 4	sand
13,	(Lane) Lane Oil Co No 3 (old)	rig
13,	" " No 4	sand
13,	" " No 5	rig bldg
28,	(Butts) Love & Patterson No 15	rig

New rigs 11
Old rigs 9
Drilling 8
Total 28

Miscellaneous.

1, North Div, Scio, Middaugh Oil Co drilling
Ashford twp, Cattaraugus Co, Murphy Oil & Gas Co.... drilling

New rigs..... 0
Old rigs..... 0
Drilling..... 2
Total..... 2

Bradford Field.

East and West Branches.

Cary, W H Duncan No 4 (old)..... rig
Dent, P C L & P Co No 66..... drilling
" " No 67..... rig
Dent, Whitney & Wheeler No 45.... rig
Bingham, lot 151-54, Union Oil Co No 21.... drilling
Warrant 2268, R J Straight No 19 rig
" 2258, Van Vleck & Mitchell No 37.... 50
J N Brown, N J Demming No 5.... sand
Havens, Phillips & Co No 1..... drilling
Kingsbury, J Vantyne No 7..... drilling
Tomes, Le Boeuff & Co No 2..... drilling
B O Co, Western Oil Co No 7..... drilling
Mack, Columbia Oil Co (old)..... rig
" Fisher Oil Co No 19 (old)..... rig
King, Carman & Co..... drilling
Hatfield, Wesley Chambers..... drilling
Wagner, C K Book No 4..... drilling
" " No 5..... rig bldg
" W C Patterson & Co No 4. drilling
Island, Pearce & Kearns No 1..... drilling
Hinchey, McMurray Bros No 6 (old) rig
Foster, C H Foster No 2..... drilling
Paton, McClure & Co (old)..... rig
Clark, McCray Bros (old)..... rig
Willis, " ..... drilling

Quintuple.

25, C W Scofield (old)..... rig
44, J W Humphrey (old)..... rig
220, Clark, Stearns & Co (old)..... rig
260, E T Howes (old)..... rig

New rigs..... 4
Old rigs and shut down..... 10
Drilling..... 15
Total..... 29

Kendall Creek.

Fisher, Larrabee & Whedon No 9 (old) rig
Moore, P C L & P Co No 14..... drilling
Mehan, J P Zane No 11 (old)..... rig

New rigs..... 0
Old rigs..... 2
Drilling..... 1
Total..... 3

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) rig
Borden, T P Thompson (old)..... 3 rigs
Duke, J West No 7 (old)..... rig
" " No 8 (old)..... rig
Norton, F W Mitchell No 20..... drilling
Baker, Baldwin & Co No 1..... sand
Erskine, G N Grow No 3..... drilling
Applebee, S M Jones & Co No 1..... rig bldg
Keating, Forest Oil Co No 54 (old).. rig bldg

New rigs..... 1
Old rigs..... 7
Drilling..... 3
Total..... 11

Foster Brook.

E T Co, Kervin & Co No 10 (old)..... rig
" E T Co No 41..... rig
" " No 51..... drilling
" " No 52..... rig
C B & H, Juter & Yager (old)..... rig
" Clark, Cooper & Co No 9 (old).... rig
" Roberts & Co No 14..... drilling
" Watson Oil Co No 43..... sand
" " No 44..... rig
" Hackett & Hutchinson No 2.... drilling
" " No 3.... rig
" Burns & Monroe No 8.... drilling
Willetts, Oliver & Skinner..... 500

New rigs..... 4
Old rigs..... 3
Drilling..... 6
Total..... 13

Four Mile.

Van Campen, Caldren & Vance (old) rig
" Jas K Van Campen No 3 (old).... rig
McCartney, H B Davis No 21 (old). rig
Dye, Manhattan Oil Co No 5 (old)... rig
Stevens, Book & Rhodes No 11..... drilling

New rigs..... 0
Old rigs..... 4
Drilling..... 1
Total..... 5

Indian Creek.

North Branch, J D Downing & Co (old) 2 rigs
Hamlin, Miller & O'Dell No 4 (old).. rig
" Forest Oil Co No 40 (old)... rig
" " No 41 (old)... rig bldg
Weston, J L McKinney & Co..... rig
" Murphy, Hogan & Williams No 10... rig
Shattuck, Bussell & Johnson No 2.. drilling
" " No 3.. rig
" Whitney & Black No 1... 50
" " No 2... rig bldg
" Wm M Brown No 8..... drilling
" " No 9..... rig bldg
Keyes, D J Keyes No 6..... drilling
G & A, Gallagher Bros No 14..... 700
Barrett, Page & Van Campen..... drilling
Gale, Moore & Watson No 5..... drilling
" " No 6..... rig bldg

New rigs..... 6
Old rigs..... 5
Drilling..... 7
Total..... 18

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) rig
" 2263, " No 7 (old) rig
Bingham, lot 498, Union Oil Co No 1. rig
" lot 569, Bennett & Thompson No 11 (old).... rig
" lot 5 8, C P Byron No 10.. 500
" lot 591, Ass'd Producers Co No 59.... 900
" lot 477, Tucker & Rolfe No 3 (old).... rig
" lot 497, Jack, Brawley & Co No 3.... drilling
" lot 497, " No 4.... rig
" lot —, R B Moran..... drilling

New rigs..... 2
Old rigs..... 4
Drilling..... 4
Total..... 10

Kinzua.

Warrant 3076, Union Oil Co No 64... drilling
" 2243, Emery Oil Co No 48 (old).... rig

New rigs..... 0
Old rigs..... 1
Drilling..... 1
Total..... 2

Miscellaneous.

Five-Mile (Mrs Chamberlain) Knox & Co No 1.... sand
" Stevens Bros..... drilling

New rigs..... 0
Old rigs..... 0
Drilling..... 2
Total..... 2

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 3..... 300
Morrison, Anchor Oil Co No 11..... 100
Rollins, Morse & Collins..... sand
Richardson, J E Fogel & Co..... rig bldg

Warren, Etc.

Wardwell, Benedict & Rockwell, No 37.... drilling
Hemlock, P M Smith, Sill & Co No 2 100
Willie, Beatty & Pickett (old)..... rig
Roy, James Roy..... rig
Kerberger, Brown Bros..... drilling
Sechrist (Spade Hollow) Magee & King.... rig
Davis, Davis Bros..... drilling
Magee, Nesmyth & Co..... rig
Sweating, Donahue & Co..... sand
Quaker Hill, Cramer & Cogswell (shut down).... 900
North Warren, Leger..... sand
" Martin & Co..... drilling
" Sanford & Jamieson rig

New rigs..... 5
Old rigs..... 2
Drilling..... 10
Total..... 17

Clarendon.

34, Ferguson, Nutting & Gray No 4 200
35, Murphy & Hennessey No 6..... rig
35, J Smith & Son No 6..... 600
55, O W Beatty & Bro No 45..... drilling
105, R I Shugert (old)..... rig
107, W B Roberts & Son No 18..... rig
162, O'Donnell & Tait No 2..... rig
162, Goal Bros No 3..... rig
162, J A Dower No 8..... 300
463, Fred Hue No 1..... 100
463, McElwaine & Windsor..... rig bldg
463, Neill & Lammers No 6..... 200
464, D Riddlesperger No 4..... 400
464, M Matson No 2..... 300
495, Conley Bros No 7..... drilling
527, F H Rockwell & Co No 24..... rig
531, S Short & Son No 2..... drilling
531, " No 3..... rig
531, Keegan, Sage & Co No 2..... rig
558, Goss, Goal & Haskell No 8..... drilling
558, " No 9..... rig
558, " No 10..... rig

New rigs..... 10
Old rigs..... 1
Drilling..... 11
Total..... 22

Tiona.

81, Fertig, McKinney & Co No 4 (old).... rig
81, " No 5 (old) rig
81, " ..... drilling
83, " (old).... 6 rigs
103, lot 15, " ..... drilling
160, McKeown Bros..... 200
160, Gilbert Oil Co No 35..... rig
160, O'Donnell & Tobias No 8..... drilling
161, Helm & Mealey No 8..... drilling
164, Howe, Wark & Co No 7..... 400
200, Bovee & Duck No 10 (old)..... rig
201, Wesley Chambers No 11..... 200
201, " No 12..... rig
202, Mandell Oil Co No 14 (old)..... rig
205, Smith, Bright & Co No 6..... sand
205, " No 7..... rig
205, Booth Bros No 15..... sand
205, Emerson & Farnsworth No 12.. 500
240, F W Winger No 5 (old)..... rig
244, Horton, Crary & Co No 10..... drilling
244, " No 11..... drilling
244, " No 12..... drilling
244, " No 13..... rig
244, " No 15..... drilling
245, Shoelkopf, Horton & Co No 7... drilling
284, Anchor Oil Co No 7..... drilling
284, " No 8..... rig
284, Pickett & Stone No 5..... 800
284, " No 6..... rig
324, " ..... drilling
324, F W Winger..... rig bldg
321, Horton, Crary & Co..... 100
286, Henderson, Spence & Richards. drilling
242, Anchor Oil Co No 4..... rig
320, Windsor & Roberts..... 800

New rigs..... 8
Old rigs..... 11
Drilling..... 21
Total..... 40

Cooper District.

407, Shank & Stewart No 9 (old)..... rig
407 " No 13 (old)..... rig
407, Cochran Bros No 13..... 1500

New rigs..... 0
Old rigs..... 2
Drilling..... 1
Total..... 3

Balltown.

3194, Porcupine Oil Co No 39 (old).. rig
3195, (Crisman) N F Clark No 14 (old) rig
3195, " " No 20.... drilling
5214, James Welsh No 5..... drilling
5214, Anchor Oil Co No 2..... drilling
5214, " No 3..... drilling
5215, May, Kelley & Grandin No 49... sand
5215, " No 51... drilling

New rigs..... 0
Old rigs..... 2
Drilling..... 6
Total..... 8

Kane.

380, Boyer, Caldwell & Co No 1..... 900
380, " No 2..... 300
380, " No 3..... 200
380, " No 4..... rig bldg
382, C H Rathbun..... 1000
384, Shirley, Hochstetter & Co No 2 500
384, " No 3 200
384, " No 4 200
384, " No 5 rig
384, " No 6 rig
384, " No 7 rig bldg

384, F W Andrews & Co No 3 ..... drilling
385, Kane Oil Co No 26 2250
385, " No 27 ..... sand
385, " No 28 1500
385, " No 29 100
385, " No 30 400
385, " No 31 300
385, " No 32 100
385, " No 33 100
385, " No 34 100
385, Howe, Lavens & Co No 4 1750
385, " No 5 1800
385, " No 6 1300
385, " No 7 100
385, " No 8 ..... rig
385, " No 9 ..... rig
385, " No 10 ..... rig bldg
386, Merrick & Co ..... rig
418, Porter, Gillmor & Quick 800
419, Union Oil Co No 4 2300
419, " No 7 1000
420, Coast, Thyng & Co No 8 2000
420, " No 10 1000
420, " No 11 500
420, " No 12 500
420, " No 14 300
420, " No 15 ..... rig
420, " No 16 1300
420, " No 18 300
420, " No 22 200
420, " No 23 ..... rig
421, Mallory & Co No 5 2000
421, " No 6 2000
421, " No 7 1000
421, " No 8 500
421, " No 9 ..... rig
421, " No 10 ..... rig
421, " No 11 ..... rig
421, P T & W C Kennedy No 2 1800
421, " No 3 1000
421, " No 4 800
421, " No 5 ..... rig
421, " No 6 ..... rig bldg
421, Shirley, Hochstetter & Co No 2 800
421, " No 3 500
421, " No 4 rig
424, Lincoln & Co No 2 1700
424, " No 3 1800
424, Fertig & Co No 2 ..... drilling
424, Tennent & Co No 2 (shut down) 200
425, Union Oil Co No 24 900
425, " No 25 300
425, " No 26 100
426, Kane Oil Co No 13 1000
426, " No 14 100
426, " No 36 100
3767, Craig & Cappeau No 15 500
3767, " No 16 ..... sand
3767, " No 17 fishing 1200
3767, " No 19 100
3767, " No 20 1300
3767, " No 22 800
3767, " No 23 100
3767, " No 27 1700
3767, " No 34 100
3767, " No 41 1200
3767, Ass Producers & Craig & Cappeau No 5 1500
3767, " No 6 1200
3767, " No 7 1000
3767, " No 8 100
3767, Finnegan & Monroe No 4 1100
3767, Roy & Archer No 3 ..... rig
3767, " No 4 ..... rig bldg
3775, Kane Oil Co No 4 1200
3775, John T Griffith No 5 100
3775, " No 7 ..... rig bldg
3775, P T & W C Kennedy No 7 ..... rig
3775, " No 10 400
3775, Andrews No 5 ..... drilling
3775, Thompson & Denman (old) ..... rig

New rigs 29
Old rigs and shut down 2
Drilling 69
Total 91

Grand Valley.

Campbell, L B Wood & Co No 10 ..... rig
Hunter, " No 2 300
Gibbs, " No 1 ..... drilling
Lot 186, W W Benedict & Co No 6 ..... rig
" 196, " No 3 ..... drilling
" 194, Parker & Nelson ..... sand
Merritt, Miller & Crippens No 6 100
" " No 7 ..... rig bldg
Peterson, " No 3 200
" " No 4 ..... rig
Lot 235 (Phil tract) Crippens & Phillips 300
White, Sherman & Gelm ..... drilling
Lot 186, (Campbell) Holman & Hopkins No 5 ..... drilling
Lot 186, " " No 6 ..... rig
Philadelphia tract, " No 1 ..... sand
Lot 197, (Blakeslee) Tew Bros & Co No 2 400
" 197, " " No 3 ..... rig
Nason, D Emery No 2 ..... rig
Brookyin Oil Co, Black, Hopkins & Co ..... sand
Zane, Fertig & Wood No 4 ..... drilling
" " No 5 ..... rig
Lot 196, Groves Bros No 3 ..... drilling
Lot 196, Groves Bros No 4 ..... drilling
J Hunter, H P Boyd & Co No 4 ..... rig
" Jos Millison No 4 ..... drilling
" " No 5 ..... rig
Goodwell, Bovee & Duck No 3 ..... rig
Proper, W W Hague (old) ..... rig
Lot 195, (Emerson) W W Hague ..... drilling
" 195, " " ..... rig
" 234, " " ..... drilling
" 233, " " ..... rig bldg
Carpenter, W J Jackson & Co No 4 ..... drilling
" " No 5 ..... rig
Emerson, Benson & Co No 3 ..... rig
Farrell, Nelson Farrell No 3 ..... sand
" " No 4 ..... rig
Lot 186, S W Stewart No 5 ..... sand
" 186, " No 6 ..... rig
" 186 " No 7 ..... rig bldg
" 149, (D Pet Co) G P Kepler No 9 ..... rig
" 149, " " No 10 300
" 136, (Severance) " No 2 ..... rig
" 200, Stettheimer ..... sand
" 185, John J Carter 100
" 150, " ..... rig
Wales, George Leckey ..... sand
Anderson, Brown & Wilson 100
Thomas, H Egolf ..... rig bldg
Reno Oil Co, Reno Oil Co No 4 ..... drilling
Von Gilder, Boiles & Co ..... rig
Lot 197, Bell & Hazeltine No 2 ..... drilling
" 197, " No 3 ..... rig
" 234, Mead & Beatty ..... drilling
" 97, Stewart & Co ..... drilling
" 53, (J Miller) Frank, Wood & Co ..... drilling

New rigs 24
Old rigs 1
Drilling 31
Total 56

Miscellaneous.

Ludlow, People's Gas Co ..... drilling
Forest, Clark & Hughes ..... rig
" 3168, Central Petroleum Co ..... drilling
Vowinkle, DuBois Oil Co ..... drilling
Pittsfield 170, Mandell, Ford & Co ..... drilling
Garland, McCray & Co 200

New rigs 1
Old rigs 0
Drilling 5
Total 6

Lower Country.

Venango and Other Sections.

Allison, Fisher Oil Co No 11 (old) ..... rig
Leehicton, Roess Bros ..... drilling
Sayers, Wolf & Kugler ..... rig
Karns, Oil City Fuel Supply Co ..... drilling
" " ..... drilling
Hogue, " No 2 100
" " No 3 ..... rig
Frampton, Frampton & Turner No 14 ..... rig bldg
Diamond, Loots & Co ..... rig
" Darr & Manning ..... rig
H Heckathorn, Phinney & Co ..... sand
Ten-Mile Bottom, John Glass & Co ..... drilling
Columbia, Columbia Oil Co No 167 200
Kirkwood, J Kirkwood ..... drilling
McBride, Thomas Smith ..... rig
Kaufman, A P Dale No 2 ..... rig
" " No 3 ..... rig
Griffin, Purtell (old) ..... rig
Widow Brown, Stewart & Co (shut down ..... sand
Young, Octave Oil Co No 20 (old) ..... rig
Jennie, (Black Ash) Emery & Schuyler ..... drilling
Pleasantville, Emery, Skinner & Co No 3 ..... drilling
Cherrytree twp, (Wilson) Anchor Oil Co ..... rig
Osmer, Galbraith & Parker (old) ..... rig
Van Buren Furnace, Fry & Badger (old) ..... rig
Foster (Bully Hill) Galbraith & Smith ..... rig
Mt Hope (Phil & Bos) Buchanan ..... rig bldg

Tarkill.

J. P Hill, Taylor, Torrey & Murphy No 10 ..... sand
Webb, Taylor, Torrey & Murphy No 17 ..... rig
Geo Hill, " No 18 500
A Hill, " No 19 300
" " No 20 300
" " No 21 ..... rig
Benton, Benton Oil Co No 5 ..... sand
" " No 6 300
" " No 7 ..... rig
Alex Hill, Duncan & Fisher No 3 ..... sand
" " No 4 200
" " No 5 ..... rig bldg
" Holt & Dorrington No 2 ..... rig
" P H Judd & Co ..... rig
Lawley, Cornwall & Hassan No 4 ..... sand
" " No 5 ..... rig bldg
Kennedy, Kale Bros & Gray ..... rig
Houser, A P Dale & Co 100
Dolan, S P McCalmont ..... drilling
" " (old) ..... rig
Shafer, Kane & Boyd (old) ..... rig
Swarms, Fertig & Stewart (old) ..... rig
Rote, J Kelley ..... sand
Judge McCalmont, P Canning & Goettell ..... sand

Rockland or Red Valley.

Black heirs, Dale Bros No 2 ..... drilling
J Jolly, " ..... rig bldg
" Heydrick & Putnam No 1 200
D Porter, Goodrich & Salisbury No 9 500
Wicks, W H H Piper .....
Hetzler, Rider & Co No 3 ..... rig
Johnson, Leekey & Foster No 4 ..... drilling
Batten, Bowen & Co No 2 400
Shafer, Heydrick, Hite & Co (old) ..... rig
Grant & Sheasley, W H H Piper (old) ..... rig

Bullion.

Hovis, Hovis Bros 300
Shorts, Giles & Smith ..... rig

Vicinity Emlenton.

D Russell, Baum & Co (old) ..... rig
Porterfield, A A Hopkins (old) ..... rig
Dr Crawford, Wm Weaver No 6 ..... rig
W P Grant, J V Ritts ..... drilling
Six Points (Aiken) Flynn Bros ..... drilling
Jamieson, Barnes & Co ..... sand
Sandy Point, Viets, Daniels & Co 200
Titsworth, Kries & Klies ..... drilling

New rigs 23
Old rigs 13
Drilling 34
Total 70

Clarion.

Rickenbrode, Ashland Oil Co No 9 ..... rig
" " No 10 ..... rig
Berlin, Patterson, Leedom & Hayes No 14 (old) ..... rig
" " No 15 ..... rig
Fisher, Staley, McDonell & Deitrich (old) ..... rig
Beals, Beals Hunter & Co No 10 300
E Slicker, Painter & Co (old) ..... rig
John Henel, Koch Oil Co No 8 ..... rig
H J Smith, Shaffer & Sheasley (old) rig
John Herrmann, Wolf & Bell No 14 900
Deitrich, Kale Bros No 3 800
Lloyd, Ritts (old) ..... rig
" Dr Metzger ..... rig
Fern, White & Gifford 1000
Strutman, Roess Bros ..... sand
" Young Farm Oil Co ..... rig
Catherman, Weaver & Black ..... rig
Strutman, Pagett & Co No 1 50
W L Hess, W L Hess No 5 950
Exley, Zellers & Co 800
Wagner & Curl, Wagner & Hahn ..... drilling
Hartman, Jacob Hahn (old) ..... rig
Wagner & Curl, Ritts (old) ..... rig
Starr, Starr & Co (fishing) 800
Dougherty, DuBois Oil Co 200
Peter Moul, Smith, Yonkers & Corlett 400
Slam Bang City, Robert Nicholson ..... drilling
Shippenville, Black & Atwater ..... rig bldg
" Rowe & Co ..... sand
Lockhart, D O White 300
Lehigh, Pyc & Co 300
Kiser, Geo Kiser 300
Green, Phipps & Shaffer ..... rig bldg
Booth, Unknown ..... rig
Parsonage lot, Swartzfeger 200

New rigs 9
Old rigs 8
Wells drilling 18
Total 35

Butler and Armstrong.

Titley, Titley & Bros No 7 1000
" " No 8 ..... rig bldg
Black, Ross, Reynolds & Co (old) ..... rig
Duility, Ireland & Hughes No 5 1000
" " No 6 ..... rig
" Greenlee & Co No 3 ..... rig
Frederick, Simpson & Brady 900
Miller, Dennison & Co No 5 1400
" Dennison & Flegler No 1 ..... sand
Howard Miller, W G Crawford & Co rig
Mortland, Thompson, Brown & Hoover 1100
Glenn, W P Turner & Co No 2 ..... rig bldg
Boyle, Brady & Co 1200
John Rogers, Branch Creek Oil Co ..... sand
Duffey, McBride & Campbell No 2 1200
Sarversville, Fisher Oil Co 1200
Walker Jefferson twp, Conkle & Co 1400
O D McMillan, S D Bell & Co ..... sand
Squire Reatt, Hunter & Cummings rig
Perisol, Phillips Bros No 1 ..... sand
" " No 2 100
——, Simcox & Myers 1200
A J Frederick, Craig & Cappeau 400

Wright's heirs, Phillips Bros No 1 .. 500
Black, Father Quitter 300
" Campbell & Murphy 200
Hickey, Boyd & Semple ..... rig
Downey, Downey & McTamany 300
Eminger, Boyd & Semple No 2 ..... rig
Pontius, Hunter & Cummings 1200
Michael Black, Morrison & Co ..... drilling
Glenn, G F Fetzer & Co No 5 ..... 6 0
" " No 6 ..... rig
Fred Dambaugh, Connors, Fishel & Co 200
Brown's Mill, Leidecker & Co ..... rig bldg
Weber, Rigney & Co (fishing) 1300

St. Joe.

Mulligan, Mulligan & Co ..... sand
Widow Witt, Witt & Co ..... drilling
Sang, Dennison & Hartman No 7 ... rig bldg
Lane, P C L & P Co No 2 800
Clouse, Phillips Bros No 5 300
Widow Witt, McGuire & Co 300

Martinsburg.

Turner, W J McKee No 7 (old) ..... rig

Thorn Creek.

Bartley, Phillips Bros No 12 1600
Girard, " No 1 1200
Mangell, Dr Bolard & Co No 1 ..... sand
" " No 2 ..... rig
Burton, McBride & Campbell 1200
Chas Morrison, Clark & McKinney. 800
Welch, " - 100
Dan Wise, " - 900
Maharg, Shetter, McKelvey & Co No 1 1700
" " No 2 500
Girard, " No 2 .... rig

New rigs 13
Old rigs 2
Drilling 39

Total 54

Washington.

Gordon, P L & H Co No 3 (old) ..... rig
" " No 5 ..... rig
Hess, " No 1 (gas) 2070
Farley, " No 2 2170
Taylor, " No 1 (gas shut down) 2345
Hough, " (Gordon stray) drilling
Morgan, " (Gordon stray) (for gas) 1950
Weaver, Citizens' Oil & Gas Co No 2 500
Weirich, Vandergrifts (Gordon sand) 2385
Mrs Curry, " No 1 2000
I Wilson, " (old) ..... rig
Johnson, " (old) ..... rig
Hall, " No 2 2150
Taylorstown, Vandergrifts 1300
Barre, " No 3 600
" " No 4 500
" " No 5 400
" " No 6 150
Mary Miller, Reed & Co ..... rig bldg
Morgan, Union Oil Co No 1 100
Wm Davis, " No 1 200
Taylor, Union Oil Co No 2 (old) .... rig
" " No 3 600
" " No 4 300
Mrs Clark, " 2000
Wylie, Coast Sons & Co No 1 1650
Lynn, " No 1 ..... rig bldg
Nazer, " (fishing) ... 1300
Schmidt, " ..... rig bldg
Clark, Thayer Oil Co No 3 1800
" " No 4 (old) .... rig
" " No 5 ..... rig bldg
Brownlee, Hallam & Co (old) ..... rig
Smith, Craig & Co No 2 (gas) 2130
" " No 3 2150
" " No 4 ..... rig bldg
Cameron, " No 2 1800
" " No 3 1800
" " No 4 ..... rig bldg
" " No 5 ..... rig bldg
" " No 6 ..... rig bldg
Lone Pine, Caldwell & Co 2000
Reed, (near Wyland Station) Asso'd Prod Co .... sand
Zelt, A P Co & Union Oil Co No 1 (old) .... rig
" " No 2 .. 1350
Baker's Station, Dyer & Roberts .... rig
Munce Heirs, Willetts & Son No 1 ... sand
" " No 2 ... sand
" " No 4 ... 2000
" " No 7 ... 500
" " No 8 ... rig
" " No 9 ... rig bldg
" " No 10 .. rig
McGovern, E M Hukill & Co 1150
J Manifold, Pew & Emerson No 2 .. rig
Kountz, Pew & Emerson No 1 1500
" " No 2 2250
Miller, Pew & Emerson 2050
Barre, " (old) ..... rig
J Munce, " 800
Wilson, Stettheimer Oil Co 2200
Andrews, Wilson, Brenneman & Co (fishing) 1530
Parsell, Fisher Oil Co 1050
Wade, B B Campbell & Co 400
Lizzie Magahaey, Roth, Peffer & Dyer 1350
Hall, Guffey & Co 300
W J Munce, John McKeown No 1 (fishing) 1650
" " No 2 ... 600
" " No 3 ... 200
" " No 4 ... 50
" " No 5 ... rig
Coal Center, B C Jackman farm, Hornbake .... drilling
Montgomery, McKinney & Co No 2 . 1150
Shirls, H Shirls No 2 400
" " No 3 250
J B Miller, Guffey & Co 400
Dr Stewart, Fisher & Co 600
Byers, R O Meldrum & Sons 2350
Shrontz, Nail Oil Co 1430
Taylor, Galligan & Young 1440
Johnson lot, Fritts & Co 200
Hallam lot, Excelsior Oil Co ..... rig bldg
Judge Hart, McKeever & Co 100
Peters Creek, Knox & Co 500
Wilson, Craig & Co ..... rig bldg
Wolf, Craig & Co ..... rig
Fergus, " ..... rig
McBride, Manufacturers' Gas Co ... 600
Maloy, Ten-Mile Oil Co 200
Fair Grounds, Wheeling Oil Co 400
Martin, Virginia Oil Co ..... rig bldg
City lot, Robbins & Co ..... rig bldg

New rigs 21
Old rigs 8
Drilling 63

Total 92

Shoustown, Etc.

Neville Island, Geo H Dimick & Co (fishing) 1300
Mt Nebo, Union Oil Co No 2 ..... drilling
Thos Pinkerton, J S McKelvy (old) rig
Ebenezer Duncan, J M Guffey & Co drilling
Economy, Dr W G Hunter & Co 1000
" Barton, Ackerly & Co ... 300
Legionville, Economites No 2 ..... rig
Brattenstein, McGrew Bros 300
Big Sewickley creek, Asa Say & Co. 400
Glenfield Station, Kilbuck Oil Co ... 300
Fair Oaks, Hunter & Co ..... sand
A McDowell, Galey Bros ..... rig
Jas Alexander, Raccoon Oil Co 600
Thos Stevenson, " No 1 800
Wm Hood, " No 2 100
Isaac Harper, " No 2 rig
Robert McCartney, " ..... rig
Charles Eachel, " No 2 rig
A P Morrow, " No 1 rig
" " No 2 rig bldg
McCoy, Raccoon Oil Co ..... drilling
Widow Stone, Galey & Co (fishing) 800
Jordan, H C Zeigler & Co (fishing). 900
" Watson & Co ..... rig
" " ..... rig bldg
Robert Boyce, J A Tomlinson ..... rig
Gilmore, Philadelphia Co No 2 500
Widow Thompson, P M Shannon & Co 400
Langfitt, Dilworth & Co 100
Oliver, Shannopin Oil Co ..... rig bldg
Wm McElheny, Lovell & Co 500
Alexander, " 600
Dan Bruce, Munhall & Co ..... rig
McCoy, Raccoon Oil Co ..... drilling

Georgetown, Etc.

Staley, Sherman & Co 600
Dewson, Boyd & Dennison 300
Swaringer, Swaringer & Co 900
Smith, Smith & Co 800
" Semple No 4 300
" " No 5 ..... rig bldg
Dawson, Dawson Bros 300
Fordyce, E M Hukill & Co No 1 .... drilling
Gregg, " No 1 .... drilling
Girard, " ..... drilling
Hathaway, " ..... drilling
Mt. Morris, " ..... drilling
Longanecker, " (old) .... rig

New rigs 13
Old rigs 2
Drilling 32

Total 47

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	MAY, 1886.	APRIL, 1886.
National Transit Co	1,749,417 47	1,656,873.95
Tidewater	181,134 21	187,322.02
Octave Oil Co	3,263.00	3,070.51
Shaffer Run	1,141.50	500.00
Franklin (limited)	6,364.72	6,031.58
Pittsburgh Pipe Line	22,096.38	21,032.07
Southwest Pennsylvania	163,248.14	52,019.15
Total	2,126,665.42	1,926,849.28
Daily average	68,602.11	64,228.31

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	MAY, 1886.	APRIL, 1886.
National Transit Co	1,692,943.26	1,824,531.17
Tidewater	190,714.46	197,205.28
Octave Oil Co	3,004 00	2,187.28
Shaffer Run	309.95	168.28
Franklin (limited)	5,212.73	1,735.83
Pittsburgh Pipe Line	22,096.38	21,032 07
Southwest Pennsylvania	89,405.65	26,935.29
Total	2,003,686.43	2,073,825.23
Daily average shipments	64,635.05	69,127.51

In the above shipments only the oil delivered to refiners is included.

Daily excess of runs over shipments, May	3,967.06
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August	11,099.01
Daily excess of shipments over runs, July	5,959.01
Daily excess of shipments over runs, June	7,992.05
Daily excess of shipments over runs, May, 1885	10,502.60

NET STOCKS.

PIPE LINE.	MAY 31, 1886.	APRIL 30, 1886.
National Transit Co	31,177,944.82	31,129,531.04
Tidewater	1,277,773.68	1,291,083.85
Octave Oil Co	3,288.00	4,373 51
Shaffer Run	23,014.00	21,226 14
Franklin (limited)	44,343.32	43,191.33
Pittsburgh Pipe Line	.....	.....
Southwest Pennsylvania	129,369.00	55,518.51
Total	32,655,724.82	32,544,924.38

Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174.37
Stocks decreased February	436,146.69
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October	184,393.91
Stocks decreased September	408,862.12
Stocks decreased August	390,529.99
Stocks decreased July	215,947.71
Stocks decreased June	356,849.49
Stocks decreased May	565,252.48
Stocks decreased April, 1885	42,525.72

	RECEIPTS.	DELIVERIES.
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,134
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,901	67,893
Daily average May, 1885	57,135	67,637

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	May 29, 1886. Barrels.	Mar. 20, 1886. Barrels.
Seven Continental Ports	936,341	709,400
London	217,785	133,021
Trieste	8,418	11,291
Total Stocks afloat and ashore	1,162,544	853,712
Increase in stocks since March 20	308,832	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS MAY 29, 1886.

PORTS.	Stocks week ending May 29.		Stocks afloat week ending May 29.		Loading. Week ending May 29.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	64,899	75,221	47,843	58,364	7,300	84,200	120,042	217,785	455,499	609,189	581,773	637,351
Trieste	14,465	8,418	------	------	15,000	------	29,465	8,418	------	------	------	------
Bremen	393,104	166,583	27,187	43,701	64,500	19,000	484,791	229,284	620,940	565,682	959,216	847,169
Hamburg	91,999	78,180	92,667	84,598	90,900	72,100	275,566	234,878	902,533	820,920	985,098	923,574
Antwerp	79,101	137,772	15,262	51,742	50,500	21,200	144,863	210,714	901,756	912,894	987,948	886,539
Rotterdam	34,316	48,571	20,897	43,156	47,300	30,500	102,513	122,227	211,824	396,154	240,353	416,510
Amsterdam	33,477	37,430	8,179	32,095	18,500	8,400	60,156	77,925	228,397	268,126	235,856	258,067
Stettin	16,665	10,527	26,900	14 293	24,700	27,250	68,265	52,070	228,856	250,249	249,838	298,134
Danzig	3,006	2,560	6,936	6,683	------	------	9,942	9,243	71,312	59,078	77,053	71,785
Total	651,668	481,623	198,028	276,268	296,400	178,450	1,146,096	936,341	3,165,618	3,273,103	3,735,362	3,701,778

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,251,457	1,170,604	651,668	481,623
Total afloat, " "	421,493	253,755	198,028	276,268
Total loading	206,100	198,500	296,400	178,450
Total	1,879,050	1,622,859	1,146,096	936,341
Afloat and loading for direct Continental Ports	32,900	24,300	-----	9,400
" " " Baltic Sea, exclusive Stettin and Danzig	41,500	36,500	83,800	15,550
" " " Total Continental Ports	1,953,450	1,683,659	1,229,896	961,291
" " " Total London	446,640	251,006	120,042	217,785
" " " English harbors, exclusive London	75,750	58,200	29,000	57,000
Grand total	2,475,840	1,992,865	1,378,938	1,236,076

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, APRIL, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., MAY 1, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS.		ILLUMINATING.		LUBRICATING & PARAFINE OILS.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	5,000	350	1,000	340	370,721	40,376	21,046	4,358	---- --	------	397,767	45,424
New York, N. Y	2,441,483	175,329	201,536	18,138	24,745,398	2,082,920	916,033	183,698	84	5	28,304,534	2,460,090
Philadelphia, Pa	1,991,348	137,700	459,567	34,076	9,505,532	754,734	5,742	1,211	------	------	11,962,189	927,721
Baltimore, Md	--------	-------	--------	-------	1,149,955	83,246	12,036	2,429	248,220	13,461	1,410,211	99,136
San Francisco, Cal	--------	-------	--------	-------	---------	--------	--------	-------	-------	------	---------	--------
All other districts	--------	-------	--------	-------	---------	--------	--------	-------	-------	------	---------	--------
Total for April, 1886	4,437,831	$13,379	662,103	52,554	35,771,606	2,961,276	954,857	191,696	248,304	13,466	42,074,701	3,532,371
Total for April, 1885	6,686,523	519,439	1,331,917	89,650	30,428,877	2,646,650	1,149,794	248,840	346,920	15,635	39,944,031	3,520,214
Total for 10 months ending Apr. 30, 1886	66,827,352	4,967,154	10,863,635	856,394	377,942,487	33,112,113	9,812,670	1,982,094	2,801,778	164,147	468,247,922	41,081,902
Total for 10 months ending Apr. 30, 1885	69,717,444	5,094,912	13,300,912	1,061,737	368,480,858	32,196,432	10,352,324	2 137,552	4,592,868	254,300	466,444,406	40,744,933

CRUDE QUOTATIONS FOR MAY, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
S 1	73¼	73½	72⅞	73⅜	73¼	73⅝	72⅞	73½	73¼	73⅝	72¾	73⅜	73½	73⅝	72⅞	73½
M 3	73½	74	72½	72¾	73½	74⅛	72⅝	72¾	73⅝	74	72⅝	72⅞	73¾	74¼	72¾	72¾
T 4	72¾	73⅜	72½	73⅛	73⅛	73⅜	72½	73¼	72⅞	73⅜	72⅜	73¼	73⅛	73¼	72⅝	73⅛
W 5	73⅛	73½	72⅞	73¼	73¼	73⅜	72⅞	73¼	73	73⅝	72⅞	73⅜	73	73½	72⅞	73⅜
T 6	73⅝	74	73⅛	73⅜	73¾	74	73¼	73⅜	73½	74	73	73¼	73¾	73⅞	73¼	73¼
F 7	73½	74⅛	73½	74⅛	73½	74¼	73⅜	74¼	73½	74¼	73⅜	74¼	73⅝	74¼	73½	74⅛
S 8	74¼	74½	73⅞	74	74¼	74⅝	73⅞	74	74⅜	74⅝	73¾	73⅞	74¼	74⅝	73⅞	74
M 10	74⅛	74⅜	73⅜	73⅜	74¼	74½	73⅜	73⅜	74⅛	74⅜	73⅜	73⅜	74¼	74⅜	73½	73¾
T 11	73¼	73⅝	73	73⅜	73¾	73⅞	72⅞	73⅜	73½	73⅝	72⅞	73⅛	73⅝	73¾	72⅞	73⅜
W 12	73⅝	74⅛	73½	73⅝	73½	74¼	73⅜	73⅝	73½	74⅛	73⅜	73¾	73⅝	74⅛	73⅜	73⅝
T 13	73	73	71⅜	71¾	73⅛	73⅛	71⅜	71¾	73	73	71⅜	71¾	73	73	71⅜	71¾
F 14	71⅞	72⅝	71⅞	72½	72	72¾	71⅞	72½	72	72¾	71⅞	72½	72	72¾	72	72½
S 15	72½	72⅝	71⅞	72	72⅜	72½	71⅞	71⅞	72½	72⅝	71⅞	71⅞	72¼	72⅝	71⅞	71⅞
M 17	71⅞	72¼	71⅛	71¼	72	72⅜	71⅛	71⅛	72	72⅜	71⅛	71¼	71⅞	72¼	71⅛	71¼
T 18	70¼	70¼	65⅞	67⅞	70½	70½	65	67¾	71	71	66½	67⅛	70½	70½	64⅞	67⅝
W 19	68¼	68⅞	67½	68⅛	68	68¾	67½	68¼	68	69	67½	68⅜	68⅛	68⅞	67½	68¼
T 20	68⅛	68½	66⅛	67⅜	68⅝	68⅝	66⅛	67½	68½	68⅝	66	67⅜	68⅝	68⅝	66⅛	67⅛
F 21	67⅜	68	66¾	67⅞	67½	68	66¾	68	67⅜	68	66¾	67¾	67½	68	66⅞	67⅞
S 22	67¾	68¼	67⅛	67¼	67⅞	68¼	67⅛	67¼	67¾	68⅜	67⅛	67¼	67¾	68¼	67¼	67¼
M 24	65¼	65¼	62⅞	63½	66	66	62⅞	63⅝	66⅜	66⅜	63	63⅝	65½	65½	62¾	63½
T 25	63¾	64½	63¾	64⅜	63½	64⅜	63⅛	64¼	63⅝	64½	63⅝	64¼	63⅞	64⅜	63¾	64¼
W 26	64⅝	65⅜	63¾	65⅛	64½	65¼	63⅞	65⅛	64½	65¼	63⅝	65¼	64⅝	65⅛	63⅜	65⅛
T 27	65⅛	65⅜	64⅜	64¾	65⅝	65⅝	64¾	64⅝	65¼	65⅜	64⅜	64⅝	65¼	65½	64⅜	64⅝
F 28	64¾	64¾	63⅛	63½	64¾	64⅞	63	63⅝	64⅝	64⅞	63	63½	64¾	64¾	63⅛	63¾
S 29	Decoration Day.				Decoration Day.				62¾	64	62	63⅞	Decoration Day.			
M 31	63½	63½	62¼	62¼	63¼	63½	62½	62½	Decoration Day.				63½	63½	62½	62½

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	May, 1886. Wells.	Prod'n.	Dry.	April, 1886. Wells.	Prod'n.	Dry.
Scio	1	8	0	1	5	0
Alma	7	33	0	8	40	0
Wirt	10	45	4	10	64	0
Bolivar	2	8	0	1	4	0
Clarksville	12	75	1	12	77	2
Genesee	2	9	0	2	3	1
Miscellaneous	0	0	0	0	0	0
Total	34	178	5	34	193	3

BRADFORD FIELD.

Division of Field.	May, 1886. Wells.	Prod'n.	Dry.	April, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	11	64	3	12	70	0
Kendall Creek	2	20	0	5	42	0
Foster Brook	8	48	0	7	39	0
Knapp's Creek	8	44	0	7	43	1
Four Mile	1	8	0	4	31	0
Indian & Meeks Creeks	7	56	0	8	64	0
Cole Creek	2	65	0	5	78	0
Kinzua	3	30	0	1	15	0
Miscellaneous	3	0	3	3	0	3
Total	45	335	6	52	382	4

WARREN AND FOREST.

District.	May, 1886. Wells.	Prod'n.	Dry.	April, 1886. Wells.	Prod'n.	Dry.
Glade	9	79	1	10	43	3
Clarendon	25	138	0	23	116	3
Tiona	25	172	0	26	164	0
Cooper	0	0	0	4	30	1
Balltown	5	185	0	8	106	3
Kane	55	3828	6	47	2865	2
Grand Valley	41	587	4	18	239	3
Miscellaneous	4	0	4	4	8	2
Total	164	4989	15	140	3571	17

LOWER COUNTRY.

District.	May, 1886. We'ls.	Prod'n.	Dry.	April, 1886. Wells.	Prod'n.	Dry.
Venango	47	510	15	51	620	15
Clarion	18	147	1	24	176	7
Butler and Armstrong	24	446	6	34	955	6
Washington	10	4860	3	6	2640	0
Shoustown, Etc	9	123	6	12	245	6
Total	108	6086	31	127	4636	34

GRAND SUMMARY.

District.	May, 1886. Wells.	Prod'n.	Dry.	April, 1886. Wells.	Prod'n.	Dry.
Allegany	34	178	5	34	193	3
Bradford	45	335	6	52	382	4
Warren and Forest	164	4989	15	140	3571	17
Lower Field	108	6086	31	127	4636	34
Total May	351	11588	57	353	8782	58
Total April	353	8782	58			
Difference	2	2806	1			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	April 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Scio	0	4	1	5	0	4	1	5
Alma	4	12	5	21	5	12	5	22
Wirt	7	7	9	23	7	7	11	25
Bolivar	0	4	2	6	1	4	2	7
Genesee	0	11	0	11	0	11	2	13
Clarksville	11	9	8	28	8	6	12	26
Miscellaneous	0	0	2	2	1	0	1	2
Total	22	47	27	96	22	44	34	100

BRADFORD FIELD.

Division of Field.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	April 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
E. and W. Branches	4	10	15	29	6	15	11	32
Kendall Creek	0	2	1	3	3	1	1	5
Knapp's Creek	1	7	3	11	4	6	8	18
Foster Brook	4	3	6	13	5	3	6	14
Four Mile	0	4	1	5	1	3	2	6
Indian Creek	6	5	7	18	7	5	8	20
Cole Creek	2	4	4	10	2	4	4	10
Kinzua	0	1	1	2	2	0	3	5
Miscellaneous	0	0	2	2	0	0	5	5
Total	17	36	40	93	30	37	48	115

WARREN AND FOREST.

Division of Field.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	April 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	5	2	10	17	2	4	5	11
Clarendon	10	1	11	22	14	2	15	31
Tiona	8	11	21	40	25	7	17	49
Cooper	0	2	1	3	1	2	1	4
Balltown	0	2	6	8	1	1	4	6
Kane	20	2	69	91	29	3	62	94
Grand Valley	24	1	31	56	22	1	17	40
Miscellaneous	1	0	5	6	2	0	4	6
Total	68	21	154	243	96	20	125	241

LOWER COUNTRY.

Division of Field.	May 31, 1886 New Rigs.	Old Rigs.	Drilling.	Total.	April 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	23	13	34	70	33	13	35	81
Clarion	9	8	18	35	15	8	18	41
Butler & Armstrong	13	2	39	54	24	8	29	61
Washington	21	8	63	92	13	9	50	72
Shoustown, Etc	13	2	32	47	14	1	17	32
Total	79	33	186	298	99	39	149	287

GRAND SUMMARY.

Field.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	April 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	22	47	27	96	32	44	34	100
Bradford	17	36	40	93	30	37	48	115
Warren and Forest	68	21	154	243	96	20	125	241
Lower Country	79	33	186	298	99	39	149	287
Total	186	137	407	730	247	140	356	743
Total Apr. 30	247	140	356	743				
Difference	61	3	51	13				

May Production Report.

Reports of the stocks on hand at 6416 Bradford wells showed an average decrease of nine-tenths barrels to the well during May:

Time.	No. Wells.	Gross Stocks.	Average per well.
May 1, 1886	6,394	225,499	50.9
June 1, 1886	6,416	221,130	50.0
Difference	22	5,631	0.9

The number of wells in the Bradford field connected with the pipe lines on the first of June is estimated at 13,920. Estimating the entire Bradford region on the basis of nine-tenths barrels decrease, the total decrease in stocks at wells during May was 12,528 barrels, a daily average of 404 barrels. Subtracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for May is as follows:

	Barrels.
Average Daily Pipe Line Runs	27,552
Average Daily Decrease of Stocks at Wells	404
Bradford's May Production, estimated	27,148
" April " "	27,807
Average Daily Decrease	659

THE ALLEGANY FIELD.

Stocks at wells in Allegany underwent but slight changes during May, and the reports of a sufficient number of wells were not received upon which to make a fair comparison for the field. The pipe line runs during May averaged 6535 barrels a day, which is a fair estimate of the daily average production.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells May 1.	No. Wells June 1.	Average per well May 1.	Average per well June 1.
Clarendon and Tiona	232	215	24	25
Cherry Grove	22	22	46	43
Cooper District	158	134	39	43
Thorn Creek	35	35	125	148
Lower Country	85	66	58	59
Miscellaneous	155	158	75	87

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for May and April is as follows:

Field.	May. Barrels.	April. Barrels.
Bradford	27,148	27,807
Allegany	6,535	6,527
Outside Runs	34,515	28,693
Total	68,198	63,027

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, had a daily average production of 2104 barrels in May, 2401 barrels in April and 2186 barrels in March.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18,330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63,876	67,981
November	31,789	35,026	8,642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32,378	7,196	11,607	19.800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55,505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10,384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63 876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63.988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,586	27,051	6,651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59,764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505

Natural Gas in Illinois.

The Litchfield Gas, Oil and Fuel Company, of Litchfield, Ill., has recently completed its tenth well which is a very fair gasser. Of the number drilled, four are good gas wells, two yield a heavy black lubricating oil and four are dry or abandoned. The wells are located about one and one-half miles southeast of the city.

The sand rock which yields the gas supply is about thirty feet thick, and is found at a depth between 640 and 700 feet. Well No. 5, which was struck four years ago, was a very large gasser, but was spoiled by a salt water vein being struck at a depth of 800 feet, which rose up near the surface and drowned out the gas. This well is being pushed down for oil. The charter for the above named company was granted on the 27th day of August, 1885. The indications of gas were so conclusive that the proprietors began at once to put in their pipe lines. On March 12, 1886, a strong flow of gas in No. 9 was struck, and on the 15th of the same month the citizens began using it generally. There are now some 300 consumers, and others are taking it as rapidly as their residences can be connected with the mains. The last well is about half a mile from the other wells; it shows no decrease of pressure, still registering over 400 pounds to the square inch, and when ignited lights up the surrounding country for fully a mile, and makes a noise like several locomotives blowiug off steam at the same time.

The company has spared no expense in putting in the plant, using nothing but heavy lap-welded, wrought-iron pipe for all its lines, rendering accidents impossible. The citizens are generally adopting its use and rely on it for all household purposes. Kitchen stoves are furnished at $3 per month during winter and $2.50 per month during summer, and heating stoves at $3.60 to $4.80 per month during the winter season. Lights are supplied at from 40 to 50 cents each per month, according to number.

The company is composed of G. H. Van Vleck, of Buffalo, N. Y., as president; L. C. Van Vleck, of Litchfield, as vice-president and treasurer, and R. M. Foster, of St. Louis, as secretary and attorney. The present capital is $150,000. The objects of the organization cover boring and drilling for gas and oil, using, distributing and piping the same along and under the public highways in any county in the State. The intentions of the company are not easy to ascertain, and that it has ultimate designs on St. Louis is a matter of much conjecture. It is believed that the same gentlemen have secured a charter for Hillsboro, the county seat, which lies twelve miles distant. The company has the exclusive franchise for Litchfield for twenty-five years, and have leased up and have now under its control all the surrounding oil and gas territory.

The Refined Market.

The refined market for the past month has ruled dull and inactive. The inquiry for export was moderate and the price for seventy degree Abel test has been marked down from 7¼c to 7c without materially increasing the demand. A prominent exporter remarked lately on the situation: "The weakness of the crude market has unfavorably depressed the demand. At Bremen the market has fallen from 6.40 to 6.25. Antwerp is also a point or two lower, and London is about steady at previous quotations. Exporters have been expecting a still lower range of prices, but judging from recent events, prices are more likely to be marked up from present quotations than down."

In regard to the foreign outlook Wm. H. Samuel & Co., of Liverpool, England, say:

"The probable future course of prices still remains very uncertain, owing to the fact, that the Russiau refiners have up to the present, practically held aloof from competition this year. It may be, that they find it impossible to compete at the unprecedentedly low prices of American oil, and in that case a sharp advance may be expected as the consuming season approaches. On the other hand, it is said, that tank shipments are contemplated, and that the absence of offers is accounted for

by the fact, that the arrangements for shipment in tanks have not yet been completed. Certainly no arrangements have been made here to receive tank shipments during the coming season, and the idea of making such shipments would appear to be premature."

The exports of refined, crude and naphtha, from all ports, from January 1 to May 29, have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	1,890,029	2,645,681
Philadelphia	51,868,784	47,954 968
Baltimore	4,560 148	3,753,478
Perth Amboy	1,593,770	--------
Total	59,912,731	54,354,127
From New York	150,347,860	139,242,471
Total exports from United States	210,260,591	193,596,598

Refined oil for the home trade is in moderate demand. Quotations are 7c. for 110° test, 7¾ to 8c. for 120° test, 8½ to 9⅛c. for 130° test, 9c. for N. Y. State test, Standard white and 9¼ to 9½c. for 150° test, water white. Western lots of naphtha are offered at 7½ to 7¾c. delivered in New York. Very little is doing in refined in cases which is quoted at 8½ to 9⅝c., according to brand. The clearances for May in this class of goods to China and the East amounts to 1,164,532 cases, an increase of 247,332 cases over the same month in 1885. The total clearances up to May 31st are 6,265,140 cases, an increase of 1,983,956 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 31st of May, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	1,950,352	1,081,518
JAPAN	879,917	838,037
INDIA	1,719,284	1,548,679
JAVA, SINGAPORE, ETC.	1,715,587	817,955
Total May 31	6,265,140	4,281,184
Total April 30	5,100,608	3,368,984
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,486
Clearances for January	1,115,958	879,165
Total	6,265,140	4,281,184

REFINED QUOTATIONS FOR MAY.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	7⅛	7¼	7¼	6	6 50	16⅜
2						
3	7¼	7⅛	7⅛	6	6.45	16⅜
4	7¼	7¼	7¼	6	6.45	16½
5	7¼	7¼	7¼	6	6.45	16½
6	7¼	7¼	7¼	6	6.40	16½
7	7¼	7¼	7¼	6	6.40	16⅜
8	7¼	7¼	7¼	6	6 40	16⅜
9						
10	7¼	7¼	7¼	6	6.40	16⅜
11	7¼	7¼	7¼	6	6.40	16⅜
12	7¼	7¼	7¼	6	6.40	16⅜
13	7¼	7¼	7¼	6	6.40	16⅜
14	7¼	7¼	7¼	6	6.40	16⅜
15	7¼	7¼	7¼	6	6.40	16⅜
16						
17	7¼	7¼	7¼	6	6.45	16⅜
18	7⅛	7⅛	7⅛	5⅞	6.45	16¼
19	7⅛	7⅛	7⅛	5⅞	6.40	16⅛
20	7⅛	7⅛	7⅛	5⅞	6.40	16⅛
21	7⅛	7⅛	7⅛	5⅞	6.40	16⅛
22	7⅛	7⅛	7⅛	6	6.40	16⅛
23						
24	7⅛	7⅛	7	6	6.40	16¼
25	7	7	7	5⅞	6.30	16
26	7	7	7	5⅞	6.30	16
27	7	7	7	5⅞	6.30	16
28	7	7	7	5⅞	6.30	16
29	7	7	7	5⅞	6 25	16
30						
31	7	7	7	5⅞	6.30	16

The People's Natural Gas Company and the City of Pittsburgh.

The People's Natural Gas Company, after another long struggle in the courts. is again victorious in its efforts to supply Pittsburgh with natural gas. Judge White on June 7th handed down an elaborate opinion, which sustained Master Woodward in favor of the company being permitted the right of way to the Smoky City. The costs, including the Master's fees of $2,500, are to be paid one-half by each party. The City Attorney declares that the case will be taken to the Supreme Court. Judge White says:

"If a city or borough does not want natural gas it can refuse to allow any company to enter for that purpose. But if it wants natural gas and gives its assent it must be on the terms and conditions of the statute. Nor can the city give exclusive privileges to any one company, for the second section of the act clearly shows that no exclusive rights should ever be conferred on any company in any manner whatever. A corporation with its charter, under the act of May 29, 1885, comes to the city and asks consent to enter with its chartered rights and privileges. The statute says to the city, You may consent or not, as you please. It does not say you may refuse and then make the best bargain you can with the company. You may assent or dissent, that is all; if you assent it must be with the rights the company has under the statute, and you can do nothing more than ordain such reasonable regulations as are secured to you in the eleventh section. The ordinances of May 10 and December 29 are general ordinances, passed after the act had gone into operation, and from the face of them evidently intended to be in pursuance of the act. That of August 10 relates to the manner of laying pipes through and over the streets, describing the manner of testing the same and limiting the pressure thereon and providing for gas escaping. The ordinance of December 29 provides for the right to lay pipes through the city's street. By the title of the ordinance of August 10, the city gives its assent, not by using that word, but by other words equally as expressive, to all companies entering the city."

Referring to the allegation that the ordinance is unwise and oppressive, the Judge says: "It is unwise and unreasonable It is unwise to have the City Engineer to control the work, place men in charge of it, supervise or direct it, to the exclusion of the company, for that would make the city directly responsible for all the acts of negligence in prosecuting the work. And it would be unjust to the company, holding it responsible for expenses and for negligence of men over whom they had no control." In the second section the Court says the first sentence is right, but regarding the remainder, where it says, "and shall be fully tested with an air pressure," he says: "It is useless and unreasonable according to the facts found by the Master, and by its indefiniteness as to how, when and by whom the test is to made, and can only lead to trouble and litigation."

THE Canadian producer averaged 90 cents a barrel for his oil in May. The total sales for the month at the Petrolia Oil Exchange amounted to 31,914 barrels. The shipments from the field in crude and crude equivalent were 29,792 barrels in May, and 34,279 barrels in April. For May, 1885, the shipments were 24,250 barrels, and in May, 1884, 34,603 barrels.

DURING the week ending May 29, 7580 barrels of Russian petroleum were received at Antwerp.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JUNE 14th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
N. Y., L. E. & W. R. R		P. M.	A. M.	A. M.	A. M.
Bradford ..... Lv.	.....	2 20	.....	6 15	11 40
Mt Jewett ..... Lv.	.....	5 00	.....	7 40	12 30
Kane	.....	5 40	.....	10 46	1 20
Sheffield Junction	.....	.....	.....	11 40	2 15
Marienville	.....	.....	.....	12 20	3 02
Tylersburg	.....	.....	.....	1 00	3 48
Clarion Junction	.....	.....	7 00	1 40	4 30
Clarion	—	.....	6 30	1 15	4 05
Shippenville	23	.....	7 12	1 53	4 45
Knox	—	.....	7 30	2 08	5 00
St. Petersburg	A. M.	.....	8 20	2 48	5 40
Foxburg	5 40	.....	8 50	3 25	5 55
Parker	5 50	.....	9 00	3 42	.....
Bruin	6 08	P. M.	9 20	4 02	P. M.
Petrolia	6 18	—	9 32	4 15	—
Karns	6 22	27	9 38	4 20	9
Millerstown	6 36	—	9 55	4 38	—
St. Joe	6 50	A. M.	10 08	4 53	P. M.
Butler	7 20	8 38	10 40	5 40	1 55
Renfrew	7 41	8 55	11 00	6 00	2 11
Callery Junction	8 10	9 20	11 25	6 25	2 35
Allegheny ..... Ar.	10 30	10 30	12 40	7 35	3 58
	A. M.	A. M.	P. M.	P. M.	P. M.

NORTHBOUND TRAINS.

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A. M.	P. M	P. M.
Allegheny ..... Lv.	6 00	9 20	7 20	1 46	5 35
Callery Junction	7 30	10 40	8 34	3 07	6 50
Renfrew	7 58	11 00	8 55	3 29	7 12
Butler	8 20	11 20	9 15	3 55	7 33
St. Joe	.....	.....	9 40	4 25	8 00
Millerstown	.....	A. M.	9 55	4 38	8 14
Karns	.....	—	10 12	4 54	8 28
Petrolia	.....	20	10 16	4 58	8 32
Bruin	.....	—	10 32	5 10	8 43
Parker	.....	A. M.	10 52	5 28	9 00
Foxburg	.....	6 25	11 25	6 00	9 10
St. Petersburg	.....	6 40	11 40	6 17	.....
Knox	.....	7 30	12 25	7 00	.....
Shippenville	.....	7 48	12 40	7 18	.....
Clarion Junction	.....	8 02	12 55	7 30	P. M.
Clarion	.....	8 25	.....	8 00	—
Tylersburg	.....	8 9	1 30	.....	22
Marienville	.....	9 18	2 10	.....	—
Sheffield Junction	.....	10 00	2 50	.....	A. M.
Kane	.....	10 55	3 35	.....	6 30
Mt. Jewett ..... Ar.	.....	12 10	4 40	.....	7 10
Bradford ..... Ar.	.....	2 05	6 05	.....	9 15
		P. M.	P. M.	P. M.	A. M.

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.35 a. m., New Castle Accommodation 3.10 p. m., Chicago Express, with through Sleeping Car, 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAINS Nos. 23 and 26 will run daily. Nos. 18 and 17 will run daily between Butler and Allegheny. No. 23 connects at Callery Junction for Allegheny and New Castle. No. 26 gets connections from Allegheny and New Castle. All other trains run daily, except Sunday.

THOS. M. KING, General Manager.

C. W. BASSETT, General Passenger Agent.

Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT MAY 10, 1886.

[Read Down.]		Central Time.	[Read Up.]	
5 00a.m.	8 15a.m.	..... Bradford	6 20p.m.	11 35 a.m
5 30a.m	10 55a m.	..... Salamanca	4 13p.m.	8 00 a m
6 45a.m.	11 55a.m.	..... Jamestown	3 08p.m.	7 09 a.m
9 20a.m.	2 20p.m.	..... Meadville	12 50p m.	5 15 a.m
10 55a.m.	5 40p.m.	..... Youngstown	10 35a.m.	1 25 a.m
12 52p.m.	7 30p.m	..... Shousetown	8 26a m.	11 25 p.m
1 30p m.	8 00p m.	..... Pittsburgh	7 45a.m.	10 45 p.m

W. C. Quincy, General Manager.

A. D. Smith, General Pass. Agent.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R.R

JULY 4, 1885.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	7 35a.m.	2 45p m.	7 35a.m.
Irvineton	8 45a.m.	4 02p.m.	8 41a.m.
Warren	8 58a.m.	4 17p.m.	8 56a.m.
Junction	9 50a.m.	5 15p.m.	9 48a.m.
Lily Dale	10 39a.m,	6 10p.m.	10 37a.m.
Dunkirk, arrive	11 2 a m.	6 45p.m.	11 12a.m.
Going South.	**Mail. No. 1.**	**Express. No. 3.**	**Sunday. No. 5.**
Dunkirk, leave	9 40a.m.	4 00p m.	2 40p.m.
Lily Dale	10 13a.m.	4 38p m.	3 14p.m.
Junction	11 05a.m.	5 45p.m.	4 08p.m.
Warren	12 m.	6 44p m.	5 06p.m.
Irvineton	12 15p.m.	7 00p.m.	5 22p.m.
Titusville Ar	1 30p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p. m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily. Uniontown, 10:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m, Arrive, 7:00, 9:00, 10:20 a. m., 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.

B DUNHAM, General Manager.

E. D. SMITH, Division Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after May 31st, '86, trains will leave Emporium as follows:

For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:25 a. m., and 9:05 p. m. on week days. Pullman sleeping car on the 9:05 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 10:40 a. m. week days.

For Kane and intermediate stations, 10:40 a. m. and 7:05 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.

CHAS. E. PUGH, General Manager.

J. W. McFARLAND,

BROKER IN OIL PRODUCTION.

81 MAIN STREET.

Buys, Sells and Leases all kinds of Oil Properties. Information carefully given.

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JOHN CONLEY,

MANUFACTURER OF

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—AND—

GASOMETERS.

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Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARRISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) and arriving at Olean at 10:57 a. m. Connects at Olean for Bradford.

Train leaves Buffalo at 2:00 p. m. (except Sunday) arriving at Olean at 4:35 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:30 p. m. (daily) arrives at Olean at 8:10 p. m.

Train for Buffalo leaves Olean at 5:50 (daily) and 10:47 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:15 p. m.

Afternoon train leaves Olean at 3:58 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				May 23, 1886.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun.
A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.
------	------	6 22	10 51	Ar. Richburg Lv	------	8 22	2 30	------
------	------	6 17	10 45	" Bolivar "	------	8 35	2 37	------
11 00	6 00	3 55	8 58	" Olean "	7 20	11 00	5 10	3 30
9 15	4 15	2 15	7 15	Lv. Bradford Ar	9 00	12 45	6 55	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 20	3 05	8 30	Ar. .....Eldred . . Lv.	7 10	11 35	3 35
5 00	2 38	8 12	" ....Duke Centre... "	7 28	11 53	4 01
4 05	1 20	7 15	" .....Tarport..... "	8 25	12 50	5 25
3 50	1 10	7 10	Lv. ..... Bradford..... Ar.	8 30	12 55	5 35
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			May 23, 1886.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	12 45	9 40	Lv .....Kinzua .....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren .....Ar	------	11 50	6 49
5 15	------	8 50	" .....Irvineton ..... "	------	12 05	7 05
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	------	8 45	Lv.....Pittsburgh.....Ar	------	8 25	7 40
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

March 1, 1886—Eastern Time.

			STATIONS.			
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
------	6 45	11 10	Ar. .....Buffalo.. Lv	8 00	5 00	------
9 37	------	------	" .....Rochester ..... "	------	------	7 50
------	------	------	" .....Salamanca..... "	------	------	------
		A. M.				
4 35	3 30	8 00	Lv.....Bradford.....Ar	11 15	8 15	12 30
		P. M.		P. M.		
------	------	12 40	Lv..... do .....Ar	3 05	------	------
------	------	3 22	" .....Ridgway..... "	12 15	------	------
------	------	4 44	" .....Falls Creek..... "	10 20	------	------
------	------	4 50	" ..... Dubois ..... "	1 14	------	------
				A. M.		
------	------	5 50	Ar .....Punxsutawney..Lv	9 00	------	------

Thousand Mile Tickets sold at Two Cents per mile.

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Sup't. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one-half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	b	b		b	a	b
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
5 25	2 55	9 05	Ar..... Bradford.....Lv	7 35	3 55	10 30
4 40	12 10	8 20	Lv... Kinzua Junction... "	8 20	4 40	11 25
4 30	11 20	8 10	" ..... Aiken ..... "	8 33	4 53	12 25
4 16	11 00	7 56	" .....Simpson..... "	8 49	5 09	12 45
3 35	10 00	7 15	" .....Smethport ..... "	9 30	5 50	1 45
4 30	12 01	8 10	" .....Rew City..... "	8 29	4 49	11 40
4 05	11 37	------	" ..... Rixford..... "	8 45	5 05	12 26
4 00	11 32	------	" .....Duke Centre..... "	8 49	5 09	12 35
3 43	11 15	------	" ..... .Eldred ..... "	9 07	5 27	1 00
3 26	10 58	------	" ..... Bullis Mills..... "	9 24	5 44	1 37
3 11	10 43	------	" .....Ceres..... "	9 40	6 00	1 55
2 57	10 29	------	" .... Little Genesee..... "	9 54	6 14	2 15
2 48	10 20	------	Lv.....Bolivar ..... Ar			2 30
			Ar.....Bolivar Lv	10 03	6 23	2 48
2 23	9 53	------	Lv..... Allentown ..... "	10 27	6 47	3 25
P. M.	A. M.			A. M.	P. M.	P. M.
1 50	9 20	------	Lv..... Wellsville..... Ar	11 00	7 20	4 10
			N. Y., L. E. & W. R. R.			
12 40	7 50	------	Ar.....Hornellsville Lv	12 00	8 20	7 45
				P. M.		
------	6 26	------	" .....Corning..... "	1 25	9 51	------
------	5 48	------	" .....Elmira..... "	1 55	10 25	------
------	5 12	------	" .....Waverly ..... "	2 22	10 36	------
------	4 36	------	" .....Owego ..... "	2 53	11 31	------
					A. M.	
------	3 53	------	" .....Binghamton..... "	3 31	12 11	------
------	8 00	------	Lv.....New Yo k.....Ar	10 20	7 30	------
	P. M.			P. M	A. M.	

Sunday train leave Wellsville at 7.30 a. m., Bolivar at 8.28, Ceres at 8.51, Eldred at 9.24, Duke Centre at 9.42. Rixford at 9.47, Rew City 10.06, Smethport 9.10, Simpson 9.51, Aiken 10.05, arriving at Bradford at 11 a, m.

Additional train leaves Wellsville daily, except Sunday, at 5.25 p. m., arriving at Allentown at 5.45, and Bolivar at 6.15 p. m.

Additional train leaves Bolivar daily, except Sunday at 10.30 a. m., arriving at Eldred at 11.50 a. m. and Bradford at 3 45 p. m.

Tickets for sale at 132 Main street and at the Union depot.

a—Runs daily. b—Runs daily except Sunday.

JOHN C. MCKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect Jan. 18, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo Lv	7 45a. m.	12 30p.m.	5 00p.m.	.....
Oak Harbor.....Ar	8 43	1 22	5 55	.....
Fremont.....	9 07	1 47	6 18	.....
Clyde.....	9 23	2 03	6 33	.....
Bellevue.....	9 38	2 18	6 47	.....
Monroeville.....Lv	9 57	2 32	7 03	1 35a. m.
Norwalk.....	10 13	3 00	7 20	1 50
Wellington.....	11 03	3 52	9 00	2 32
Creston..... .....Ar	11 52	4 40	10 45	3 15
Orrville .....Ar	12 20p.m.	5 10	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 10	6 00a. m.	6 00
Massillon.....Ar	1 20	5 50	6 40	6 40
Massillon.....Lv	1 20	5 50	6 40	6 40
Bowerstown.....Ar	3 05p.m.	7 45p.m.	9 10a. m.	9 10 a.m.
Canal Dover.....	2 38p.m.	.....	8 00a. m.	8 00 a.m.
Newcomerstown	3 27	.....	8 47	8 47
Cambridge.....	4 30	.....	9 45	9 45
Mackshurg	6 10	.....	11 38	11 38
Marietta ....Ar	7 20p m.	.....	12 50p.m.	12 50p.m.

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta Lv	6 20a. m.	2 30p.m.	.....	.....
Macksburg.....	7 25	3 42	.....	.....
Cambridge.....	8 54	5 20	.....	.....
Newcomerstown	9 48	6 20	.....	.....
Canal Dover.....	10 28 a.m.	6 55p.m.	.....	.....
Bowerstown.....	9 45 a m.	4 00p.m.	6 20 a.m.	.....
Massillon.....	12 30p.m.	8 35	8 12	.....
Orrville.....Ar	1 10	9 15	8 50	.....
Orrville.....Lv	1 25	10 15*	8 50	.....
Creston Lv	1 57	10 45	9 22	.....
Wellington	2 45	11 28	10 10	*
Norwalk.....	3 35	12 10	11 25	7 25a. m.
Monroeville.....	3 47	12 25a. m.	11 37	7 37
Bellevue	4 04	*	11 55	7 53
Clyde	4 18	.....	12 10p.m.	8 08
Fremont.....	4 35	.....	12 30	8 25
Oak Harbor.....	4 58	.....	12 55	8 48
Toledo.....Ar	5 55p.m.	.....	1 55p.m.	9 45a. m.

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
6 00p.m.	11 40 a.m.	Ar.....Huron.....Lv	6 25a. m.	2 15p.m.
5 15p.m.	10 45 a.m.	Lv.....Norwalk.....Ar	7 15a. m.	3 10p.m.

* Daily.

This road is now open through from Toledo to Bowerstown, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE—Between Toledo, Cambridge and Marietta; Toledo and Bowerstown; Toledo and Akron, Youngstown and Pittsburgh; Chicago, Akron, Yonngstown and Pittsburgh.

M. D. WOODFORD, General Manager. JAMES M. HALL, Gen'l. Pass. Agent.

THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., JULY, 1886. No. 6.

THE GEOLOGY OF THE PITTSBURGH COAL REGION.

A PAPER READ BEFORE THE AMERICAN INSTITUTE OF MINING ENGINEERS, BY J. P. LESLEY, STATE GEOLOGIST OF PENNSYLVANIA.

[CONTINUED FROM PAGE 1341.]

THE most interesting feature of the geology of the Barren measures is their *oil-bearing sands.** The Morgantown sandstone is the *first oil sand* of the Dunkard Creek oil region; and yet it lies only about 150 feet beneath the Pittsburgh coal bed, and its outcrop, 50 feet thick, can be seen from the windows of the Monongahela House running along the bluffs of the opposite side of the river. The *Mahoning sandstone*, lying there between 400 and 500 feet beneath the Pittsburgh coal bed, yielded most of the Dunkard Creek petroleum. Of course, the well drillers were bound to find their "third oil sand," and in searching for it struck the Freeport sandstone of the Allegheny river coal series (there about 600 feet beneath the Pittsburgh coal bed), then the Clarion sandstone, and then the Conglomerate. All these they called one sandstone; said it was 400 feet thick; and abandoned it because it yielded very little oil, or none at all. It is needless to say that, when they were at the bottom of their so-called third sand on Dunkard creek, they had not got within several hundred feet of the top of the real first oil sand of the oil regions.

THE ALLEGHENY SERIES.

This series underlines Pittsburgh from a depth of 250 feet down to 620 feet. Its groups of rocks, coal beds, limestones, iron stones, shales, and sand rocks, rising gently northward, make their appearance successively in the bed of the Allegheny river from Freeport up to the mouth of the Red Bank creek. With a gentle westward rise they come to water level down the Ohio river, near Beaver, and make the country from there to the Ohio line. They outcrop along a wide east and west belt across Lawrence, Butler, Clarion, Armstrong, Jefferson, and Indiana counties, and so on to the Allegheny mountains.

The First Geological Survey recognized in this formation only six persistent coals; the Upper and Lower Freeport, the Upper and Lower Kittanning, the Clarion, and the Brookville beds. Wherever any coal bed was noticed it was identified with one or other of these six beds; and if there were strong arguments against the identification the bed in question was looked upon as a local deposit of no classical importance.

The long and minute examination of Western Pennsylvania, made by the Second Survey during the seven years from 1875 to 1882, resulted in proving that three persistent coal beds must be added to the six already established; and thus the numerous supposed local deposits assumed their proper places. The classification of nine beds in three groups has been established: Upper, Middle and Lower Freeport; Upper, Middle and Lower Kittanning; Upper, Middle and Lower Clarion. I have already said, however, that, while this classification holds good in all the counties mentioned, there is scarcely any one column where more than two or three of the nine beds are workable. The names adopted for the groups are taken from the districts where the beds were earliest known and mined; but the maximum exhibition of a bed will be found at other localities; and this fact has given rise to a considerable number of popular local names. Full information respecting each sub-division and the beds which it contains will be found in the numerous volumes of the reports of progress. I will only mention those which describe these coal beds in the Pittsburgh region proper, lying between the range of Chestnut Ridge and the Ohio State line. These volumes are: H 4, H 5, H 6, Q, Q 2, Q 3, V, and V 2. In volume I 2 will be found a large number of well records, many of which pass through the Lower Productive Coal Measures, but give little information concerning them.

Respecting the coal beds I have already said enough in speaking of the one best known, the Upper Freeport, in comparing it with the Pittsburgh bed. I need only add that the coal trade of the Allegheny river comes from this lower coal series, just as the Monongahela river trade is maintained by the upper coal series.

The most striking feature of the series is the fact that it alone contains cannel coal beds; *e. g.*, the great deposit in Jefferson county, 12 feet thick and a mile or more in diameter; and the great deposit of cannel and black shales at Darling, in Beaver county, equally local in its character, and made celebrated by the large number of fossil forms obtained from it by the zealous scientific researches of the Hon. Mr. Mansfield, to whom the survey is so much indebted in the preparation of the volume of the Coal Flora (P.)

Most of these fossil forms are plants; but large and beautifully preserved crustaceans (*Eurypteroids*) have been found there with them. These are described in a small, separate volume, entitled Report P 3, published in 1884. The cannal coal deposits specially characterize the Middle or Kittanning group of the series, as is also the case on the Kanawha river in West Virginia.

The First Geological Survey recognized but one persistent limestone in the Lower Productive measures; and this limestone became, early in the history of the survey, a key to the identification of the coal beds above and beneath it over the entire region. It remains to this day the principal key for calculating depths to deposits as far down as the oil sand group.

It still retains the name originally given to it, that of the *Ferriferous limestone*. The name was bestowed upon it to signify that it carried all the important brown hematite iron ore deposits of Western Pennsylvania; de-

* K., 391.

posits which were mined so extensively that they furnished stock for between fifty and sixty charcoal furnaces, all of which have been long since blown out, or rebuilt on a larger scale to use these ores as mixtures with ores from Canada and Lake Superior.

The *Ferriferous limestone* at the bottom of the Kittanning group is double,* the upper part gray, the lower part blue, containing a considerable percentage of carbonate of soda. It is crowded everywhere with fossils, chiefly crinoids, and always in a fragmentary or drifted condition; nowhere does it present the aspect of a coral reef. It weathers in furrows, wavy and shrivelled. It varies in thickness between the extremes of 0 and 25 feet, and sometimes shows itself on the sides of the valleys in vertical cliffs from which masses as large as a house have broken off and slid down to the streams. Over it often lie from 20 to 75 feet of sandy shales. Wherever this is the case there is a layer of chert between the shales and the limestone. The shales are also ferriferous, and contain nodules and often large balls of iron stone. The brown hematite deposits are in pockets in the upper part of the limestone. The theory of the survey was a natural one, that both the chert and the iron ore are results of the descent of silica and iron in solution from the overlying shales into the limestone; and that, therefore, wherever the shales were argillaceous and ferriferous, there occurred a large deposit of ore without chert; that wherever the shales were very silicious, and not very ferriferous, there occurred a large deposit of chert alone; and wherever the shales were both highly silicious and highly ferriferous a particularly thick deposit of cherty ore would be found. To this was popularly given the name of *buhrstone iron ore.*

The Second Survey greatly extended these observations, and its reports summarize the facts, with many local details of great interest. The course of geological science through the last forty years has established in all parts of the world the correctness of the theory that such deposits of brown hematite are due to the gradual solution and removal of limestone to make room for the precipitation of ore with a variable amount of solidified gelatinous silica. A very good discussion of this subject will be found in one of the reports of the Kentucky Survey. An application of the theory to the Leadville deposits in Colorado has just been published in the *Engineering and Mining Journal.* It will also be found discussed and illustrated in the volume of the reports of progress of the Survey T 4 on Centre county; and a description of it under different circumstances will appear shortly in a report of the Cornwall ore mines in Lebanon county, in the annual report for 1885, now going through the press at Harrisburg.

The persistent limestone horizons of the Allegheny coal series have been found by the Second Survey to be more numerous than was supposed. Almost every coal bed of the series is now known to be accompanied by a limestone bed, not indeed everywhere, but in hundreds of localities. Each of these limestones has had a classical name assigned to it.

THE POTTSVILLE CONGLOMERATE (NO. XII.)

I think I may stop here in my description of the coal measures of the Pittsburgh region proper; for, the underlying Pottsville conglomerate, with its three massive sandstone sub-divisions, its insignificant coal beds, its small but remarkable fossiliferous limestones, its worthless iron ores, has a general outcrop belt so far to the north as to exclude it from the area of the Pittsburgh region proper. The top of the formation comes to the Allegheny river level at Brady's Bend, goes down again, reascends to form the cliffs at Parker, and then spreads right and left, rendering the Clarion region one of the rockiest in the State. It presents superb exposures up and down the Beaver, Connoquenessing, Neshannock, Shenango and Mahoning rivers, in Beaver, Lawrence, Mercer and Butler counties. Eastward it rises steeply from under the Blairsville-Connellsville basin to the summit of Chestnut Ridge on top of which great masses of it remain in their original situation overlooking Western Pennsylvania, and offering to artists a curious and picturesque scenery little known.*

THE MAUCH CHUNK RED SHALE NO. XI.)

Beneath the conglomerate lies the red shale formation, No. XI, which can be studied by the members of the Institute from the railroad car windows while passing through the mountain gap of the Conemaugh, above Blairsville, and the mountain gap of the Youghiogheny, above Connellsville.

The valuable iron ore of Uniontown, in Fayette county, lies at the top of the formation, and a thick calcareous mass forms its base. These are minutely described in Reports K 2 and K 3. I will only add, that this *siliceous limestone*, about 30 feet thick at Blairsville, is recognized as far east in Middle Pennsylvania as Trough creek, Huntingdon county, where it forms a group of beds from 12 to 15 feet thick; but when followed from Connellsville along Chestnut Ridge into Virginia, it is seen 80 feet thick on Cheat river, swelling into the great sub-carboniferous limestone formation further south. To the west it reappears in Ohio and Kentucky, and develops into the five Archimedes limestone formations of the Mississippi river.

It is perfectly evident therefore that this *siliceous limestone* of No. XI, (the mountain limestone of England) is a continental deposit; that it must underlie the Pittsburgh region, and should be passed through by every deep well. The first demonstration of the fact was afforded by the Boyd's Hill well in the city of Pittsburgh, which I described in Report L in 1876, discussing the application of natural gas to the manufacture of iron. The section there given shows this limestone lying at a depth of 914 feet in the well, *i. e.*, 807 feet beneath the Union Depot, 761 feet beneath low water in the river, or 20 feet *below* mean ocean level at Hoboken, (see Report N, p. 6.)

Recently this limestone has been recognized in all the wells drilled in Washington county. I have a communication from Professor Alonzo Linn, of Washington and Jefferson College, giving an account of its microscopic constitution. I look upon Professor Linn's results as of the greatest importance for explaining the origin of such limestones, bringing them into the range of oceanic coral reef sand deposits, such as are now being made over immense areas in the Pacific Ocean. He finds the 80-foot *sand lime* of the wells to resemble closely the No. XI *siliceous limestone* of the Bolivar and Connellsville gaps.

THE MOUNTAIN SAND GROUP (POCONO NO. X.)

This comes next, lying beneath river level at Pittsburgh at a depth of from 760 feet down to nearly 1600 feet. It represents the Pocono sandstone formation No. X of Eastern and Middle Pennsylvania. It makes great arches of cliffs in the gaps of Blairsville, Johnstown, Connellsville and Ursina. Between two and three thousand feet thick in the eastern counties, it is but 840 feet thick at Pittsburgh, and 650 feet thick in the Venango

* Sometimes still more sub-divided (Q., 315).

* See my Sketches of isolated castellated masses of it, Elk Rock, etc., in Report L, pp. 4, 6.

county region. It spreads westward and southward to its long outcrop in Ohio and Kentucky, where it is known as the Knobstone formation. I have already spoken of the group of thin coal beds which it includes.

In the northern oil district the mountain sands hold no oil, but in the Butler oil district the third mountain sand has been productive. It there received the name of the first oil sand, under the mistaken supposition that it was the same rock as the first oil sand of Venango county. This caused a false identification of the real first Butler oil sand with the second Venango oil sand, and of the real second Butler oil sand with the third Venango oil sand. The objections of the Geological Survey to this identification were unheeded for a good while, until at length a trial well was sunk deeper, and the third oil sand of the Venango belt became the fourth Butler oil sand. But still the *third mountain sand* is known in Butler county as the first oil sand.

The first or uppermost mountain sand becomes very coarse northward, and appears as a great conglomerate in Warren and McKean counties. In Warren county it was named in the first years of the Survey the *Sub-Garland conglomerate*, and in McKean county the *Sub-Olean conglomerate*, which name alone will be used in the summary geology of Pennsylvania, which I am now preparing for the press. In the report on Mercer county, it was named *Shenango sandstone* and the *ferriferous sandstone*, on account of the abundance of nodules of iron ore which pervade it. It lies in the northern region only from 50 to 70 feet beneath the lowest division of the conglomerate (the *Olean conglomerate*), which makes the rock cities of McKean county, and is quarried at Garland Station in Warren county.

Mr. Carll early made the important discovery that the *Olean* and *Sub-Olean conglomerates* need never be mistaken for each other, if strict attention be paid to the shape of their pebbles. These are round or egg-shaped in the Olean, and flattish in the Sub-Olean. It is an important geological fact that the pebbles in all the coarse sandstones from the Sub-Olean *downward* are, as a rule, flat; and the pebbles of all the conglomerates and sandstones from the Olean *upward*, round. The cause of this distinction is obscure, but it must probably be sought for in the different character of the countries from which the two sets of deposits were brought. It may be due perhaps also to some physical change happening to the character of the water ways along which, or shallow water beds in which, they were deposited.

The oil bearing *Berea grit* of the State of Ohio was at first doubtfully identified with the mountain sands. It now seems probable that it is the equivalent of the third mountain sand, or first Butler oil sand, and not of the Murraysville gas rock, with which it has also been identified.*

* Professor White at one time identified the Berea grit with the Smith's Ferry oil rock in Beaver county, but he has recently convinced himself, by combining the last investigations of Dr. Orton, State Geologist of Ohio, with his own, that the Berea oil rock is identical with the Rochester oil rock, 900 feet beneath the Sub-Olean.

[TO BE CONTINUED.]

The First Oil Speculators.

It is now claimed that the first oil speculators were Bosworth, Wells & Co., of Marietta, Ohio, that as early as '43 this firm bought shipments of two to five barrels of crude from Virginians, who secured it on the Hughes river, a tributary of the Little Canawa. This was sold for medical purposes in Pittsburgh, Baltimore, New York and Philadelphia. Two of the Pittsburgh firms handling it for this purpose were Schoomaker & Co. and B. A. Fahnestock.

OIL REGION CHRONOLOGY.

For June, 1886.

June 1.—Age Oil Report shows 351 wells completed in May, 57 of which are dry; new production, 11,588 barrels; new rigs, 186; old rigs 137; wells drilling, 407; total field operations, 730; decrease from April, 13. Market opened weak at 62¼c, with sales at this figure. It advanced to 62⅝c, fell back to 62⅜c, and fluctuated between this point and 63¼c up to 2 p. m. During the last hour greater interest was manifested and it rose rapidly advancing to 65⅝c and closing at 65⅛c. Carrying rates—Bradford, 65c; New York, Oil City and Pittsburgh, 50c. Washington–A. P. Co.'s well on the Zelt farm, near Wyland Station, through sand and dry. Cameron 1, 93 barrels an hour. Twenty-four hour gauges—Barre, No. 1, 1000; Taylor, 725; Munce, No. 3, 625; Smith, No. 1, 565; Manifold, 325; Barre 2, 640. Production of field from thirty wells about 8400 barrels. Pew & Emerson, No. 2, on the Koontz farm, 40 feet in Gantz sand with little gas, but no oil. P. L. & H. Co., on Morgan farm, in top of Gordon sand, with plentiful supply of gas. Canning & Goettel well, on Judge McCalmont farm, one mile northwest of the Tarkill development, in sand and showing for a big well. Raccoon Oil Company's well, on Robert McCoy farm, Shoustown, through the sand and dry. Condemns a good deal of territory on west side of the field. Michael Ryan, an employe of the Corry Gas Line, attempts suicide at Warren, by cutting his throat with a razor.

June 2.—Market quite lively; opened at 64⅞c, weakened to 64⅜c, and advanced to 65c. About 11 o'clock it went up to 67c, sold down to 66¼c, reacted to 66½c, and at 1:30 p. m. rose to 67¼c. It began to weaken from this point and closed at 65⅛c. Carrying rates—Bradford, 65c; New York, 55c; Oil City, 50c; Pittsburgh, 35c. Washington—Farley 2, 60 feet in sand without oil; Willets 1, on Munce, struck first pay streak last night and doing 40 barrels an hour this morning; No. 5 is through the "fifty-foot" and drilling in slate; last 24 hours' gauge 157 barrels; Cameron 1, gauged 2139; Barre 1, 960; Barre 2, 640; Willets 3, Munce, 672; Union, on Taylor, 670; Smith 1, drilled deeper and made 544 barrels last 24 hours; Vandergrift 2, on Weirich, drilling in stray sand with hole nearly full of oil. Phillips well, on the Piersol tract, at Reibold, Butler county, down and dry. Soldiers' and Sailors' monument unveiled at Smethport, McKean county.

June 3.—Market opened steady at 65¼c; a few sales were made at this figure, when it advanced to 65⅝c. After many fluctuations between 65⅜c and 64⅞c, it fell off to 64¼c, and closed at 64⅝c bid. Carrying rates unchanged. Washington—Vandergrift, No. 2, Hall farm, shut down in Gordon sand with showing of oil. Twenty-four hour gauges—Cameron, 2235; Smith, No. 1, 612; Barre 1, 1020; Barre 2, 412; Willets (Munce) 3, 700; No. 5, 147; Taylor, 647; Willets, Munce 1, and Clark 2, 32 barrels an hour. The Hough gasser deepened to Gordon sand, increases gas supply, but contains no oil. Thomas Tait severely injured while cleaning out a well near Big Shanty.

June 4.—Market firmer under gauges from Washington that show a decline in the output of the gushers. Opened at 64⅝c, advanced to 65c, and receded to 64¾c. It then rallied, and at 2 p. m. 65¾c was bid. Another rush carried it to 66½c, when it fell off to 66⅛c, and jumped to 66⅝c. It gradually weakened to 65¾c, braced up to 66c, and closed at 65½c bid. Washington—

Vandergrift 2, Hall farm, drilling in Gordon sand, with hole full of oil; P. L. & H. Co., on Farley, through "fifty-foot" with small showing of oil; the P. L. & H. Co.'s wells, on the Hough and Mrs. Morgan farms, are both below the Gordon sand and hopelessly dry of oil; both are fair gassers. Ground broken at Wheeling, W. Va., for pipes of the West Virginia Natural Gas Company, and first pipe laid in the city. Jesse Heydrick's stable, at Millerstown, burned. Canning & Goettel well, at Tarkill, drilled through the sand yesterday and made 225 barrels 24 hours ending this morning. Work started at Mt. Jewett, on the narrow gauge connection, between the B., B. & K. and P. & W. railroads. Death of Rev. M. W. Dillingham, pastor of the Baptist Church at Oil City, aged 52 years.

June 5.—The market opened at 65⅜c, weakened to 65c, advanced to 65½c, receded to 65⅛c, then rallied to 65⅞c. At 1 p. m. 65⅝c was bid, and at 2 p. m. it weakened off to sales at 64⅞c, and fluctuated between this figure and 65⅛c, closing at 65c bid with sales. Carrying rates 40 to 65c. Washington—Pew & Emerson's mountain sand well, on the Manifold farm, increased to 600 barrels by deeper drilling; Smith 3, strikes Gantz sand; Pew & Emerson well, on Miller, in Gantz sand and gassing heavily; Willets 4, on Munce, in Gantz sand and showing gas, but no oil. Gauges—Barre 1, 1008; Barre 2, 360; Cameron 1, 2462; Smith 1, 595; Taylor, 725; Clark 2, 768; Munce 3, 568; Munce 5, 75; Union 1, on Clark, is drilling in the Gantz sand. Vandergrift & Co. get a heavy gasser on the L. McCarroll farm, Mt. Pleasant township. Dennison & Fleeger strike a 150 barrel well on the Miller farm, eighty rods south of the Ort farm development, Butler county, and open the field for further extension on a north and south line. Natural gas turned into the mains at Corry from wells at Ludlow. Required forty-one minutes to traverse the twenty-seven miles from Glade where it taps the Warren line, to Corry.

June 6.—Sunday. Willets, No. 4, George Munce farm, Washington, strikes the upper pay streak and starts at 22 barrels an hour.

June 7.—Market opened firm at 65⅜c, advanced to 65½c, and weakened to 64¾c. It again rallied to the 65c point, fluctuated the rest of the day between 64¾c and 65⅝c, and closed at 64⅞c. Washington—Willets 4, Munce, making but 6 barrels an hour this morning; No. 1 is 77 feet in sand and made 480 barrels last 24 hours; No. 3 did 568; No. 5, 75; Cameron 1, 2462; Barre, No. 1, 912. Vandergrift, No. 2, on Weirich, completed. No oil found in Gordon sand, but expected to make a 50 barrel well from the stray sand. Kane field gauges 5654 barrels from 132 wells. Lima production reported at 1200 barrels a day. People's Gas Company, of Pittsburgh, (Pew & Emerson), obtain an injunction from the Court of Common Pleas, restraining the city from interfering in any way with their laying pipes in the streets. Matthew Hefle, a baker, drowned while swimming in the French creek, near Franklin. Death of Robert Gray, of the well-known firm of Gray Brothers, oil producer, at Winnipeg, Manitoba. Daniel Morgan, aged 70 years, commits suicide at Duke Centre.

June 8.—Market opened strong at 65⅜c, the lowest point of the day, and up to 1:30 p. m. vibrated between 65⅞c and 66⅜c. A little before 3 o'clock it climbed rapidly to 66¾c, and closed at 66⅜c. Carrying rates—Bradford, 65 and 70c; New York, 60c; Oil City, 55c; Pittsburgh, 40c. Washington—Cameron 1 gauges 1874 barrels; Barre 1, 816; Barre 2, 395; Munce, No. 1, 485; No. 3, 570; No. 4, 95; No. 5, 26; Taylor, 745; Smith, No. 3, starts flowing at 20 barrels an hour; Meldrum & Sons, on Byers lot, 15 feet in Gordon sand, with no oil; Hough well stops drilling in fourth sand, found 100 feet below the Gordon. Good supply of gas, but no oil; Vandergrift 2, on Weirich, shot and collapses the casing. B., B. & K. R. R. freight depot, at Bradford, burned at 2 a. m.

June 9.—Market opened with sales at 66⅜c, fell off to 66c, and reacted to 66½c. It afterwards sold down to 65⅜c, and closed at 65⅜c. Washington—Smith 3 made 221 barrels first 12 hours and improved by deeper drilling to 30 barrels an hour and flowing steadily; Vandergrift 2, on Hall, makes a heavy flow. Meldrum & Sons, on Byers lot, through sand and dry. Wyland Station well abandoned at a depth of 2599 feet. Dennison well, on Miller farm, Butler county, reported at 300 barrels, and considerable excitement prevails along the southern extension of the Ort farm development, eastern belt, where thirty new wells are being started. Free delivery of mail, granted for Bradford, to go into effect July 1. Louis Weinmann fell forty-eight feet from a derrick in the Franklin heavy oil district, by the breaking of a plank, and received injuries from which he died.

June 10.—Market opened very weak under news that Smith, No. 3, Washington, was doing 121 barrels an hour. First sales were at 64½c, one cent below yesterday's close. It rallied to 64⅞c, broke to 64⅜c, and closed at 64⅝c. Carrying rates 40 to 65c. Washington—Smith, No. 3, doing 121 barrels an hour; three bits run increased its production to 100 and then to 130 barrels an hour. Twenty-four hour gauges—Cameron 1, 1789 barrels; Vandergrift 2, on Hall, 4 to 6 feet in Gordon sand and doing 150 barrels; Barre, No. 1, 820; No. 2, 400; Taylor, 680; Clark 1, 98; Clark 2, 675; Hess 2, 35; Gordon 1, 72. Twenty-nine producing wells reported in the Lima field with a daily yield of 822 barrels.

June 11.—Market opened at 64⅞c and advanced to 65⅜c. It afterwards weakened to 65⅛c, and at 2 p. m. grew more active, rising to 65⅞c, falling back to 65⅝c, rallying to 66⅜c, and closing at 66c bid. Carrying rates 40 to 60c. Washington—Smith, No. 3, gauged 2890 barrels in 24 hours, ending this morning, and was making 110 barrels an hour this evening; Hall, No. 2, made 176 barrels in 16 hours, and in evening was making 70 barrels an hour. Twenty-four hour gauges—Cameron, No. 1, 1574; Smith, No. 1, 284; Munce, No. 1, 656; No. 3, 568; Barre, No. 1, 675; No. 2, 574; Taylor, 700; Manifold, 390; Gordon, No. 4, 170. Eighteen wells in field gauge 10,000 barrels. Fertig & Wood, No. 4, on Zane farm, Grand Valley, made 115 barrels first 24 hours after shooting.

June 12.—Market opened at 65c, one cent below Friday's close, on reports that Hall, No. 2, at Washington, was doing 70 barrels an hour. It rallied to 65⅝, went back to 65c, and closed at 65¼c. Carrying rates—Bradford, 65c; New York, 45c; Oil City, 50c; Pittsburgh, 30c. Washington—Union Oil Company's well, on the Weirich, abandoned some time ago as dry, reported to contain considerable oil. Fisher well, on J. B. Wilson farm, abandoned on account of failure of the Meldrum, on Byers lot. Gauges—Smith 3, 2530; Cameron 1, 1555; Hall, No. 2, 1680.

June 13.—Sunday. Decline of the Washington gushers reported. Cameron 1, gauges 1505 barrels; Smith 1, 272; Smith 3, 1730; Barre 1, 645; Barre 2, 510; Willets, Munce 1, 655; No. 3, 500; Taylor, 650; Manifold, 330. Southard's saw mill, at White Gravel, near Kinzua Village, destroyed by fire with large amount of lumber; loss, $30,000.

June 14.—Decline in the gusher wells at Washington

starts a little boom, and the market opens at 66¼c, and advances with good buying to 67⅜c. It weakened to 66⅝c, and at 2:50 p. m. it advanced to 68⅜c, and closed at 68⅛c. Carrying rates—Bradford and New York, 65c; Oil City, 50c; Pittsburgh, 40c. Washington gauges—Cameron 1, 1420; Hall 2, 984. Smith 3 drops from 2530 barrels Saturday to 1524 barrels. Stettheimer Oil Company, on Wilson, in Gordon sand and showing for a duster. Craig & Cappeau strike a big gasser on the Frederick farm, between Herman and Carbon Centre, in Butler county. Kane production 5080 barrels from 150 wells, according to Goodwin's report. Porter, Gilmor & Co.'s well, on 418, reported a failure. Annual election of New York Consolidated Stock and Petroleum Exchange. Whole vote polled 783. C. G. Wilson elected President; Frank Tack, First Vice-President; T. L. Watson, Second Vice-President, and John Stanton, Treasurer.

June 15.—Market opened steady at 68¼c, broke to 67¾c, rallied to 68⅜c, and sold down to 67c, closing at 67⅛c. Carrying rates—Bradford, 65c; New York, 70c; Oil City, 55c; Pittsburgh, 50c. Washington gauges—Smith 3, 1455: Cameron 1, 1450; Hall 2, 1000 last 24 hours. Union Oil Company, on Clark, strikes Gordon sand and shows for small well. Hon. Charles S. Wolfe opens the Prohibition campaign at Bradford.

June 16.—Market opened firm at 67¼c, rallied to 67⅝c, and broke to 66⅝c. It then advanced to 67⅝c, when it shaded off again and closed at 66⅞c bid and freely offered at 67c. Carrying rates 50 to 60c. Washington gauge reported off 500 barrels from yesterday's figures. Union, No. 1, Clark, made 45 barrels first 24 hours. Stettheimer Oil Company's well, on J. B. Wilson farm, proves a small gasser in Gordon sand; will be abandoned. Cameron 1, 1319; Smith 3, 1516 barrels. Field gauge 8593 barrels. Shannon well, on Thompson farm, Shoustown or Shannopin, in sand with small showing. Production of field 550 barrels a day. McBride, Iman & Co. open a promising well on the Burton farm, southeast of Thorn Creek, Butler county. An engine on the P. & W. R. R. jumped the track at Paint Creek, near Edenburg, pulling the train along; George Sittig, the engineer, and Case, a brakeman, instantly killed, and Steffee, the fireman, fatally injured.

June 17.—Market opened at 67c and broke to 66½c It afterwards strengthened to 67⅝c, and closed at 67½c bid. Washington wells gauge—Smith, No. 3, 1397 barrels; Cameron, 1346; Smith, No. 1, 223; Barre, No. 1, 700; No. 2, 480; Munce, No. 1, 480; No. 3, 430; Manifold, 480; Vandergrift, Hall, 768: Clark, No. 2, 600. Field gauge 8324 barrels. Gordon 4 is pumping 175 barrels a day. Joseph Clark, of Kittanning, shot in the breast at Shamopin Station, by Frank Karns. No fatal results are feared. Galey well, on McElhaney farm, Shoustown, through sand and dry. The People's Gas Company, of Warren, consolidate with the Pennsylvania Company, and a reduction of 35 per cent. from the present rates is promised consumers.

June 18.—Market opened at 67⅝c, ranged between 67⅜c and 68½c, and closed at 67¾c bid. Carrying rates—Bradford, 55 to 60c; New York, 75 to 80c; Oil City, 60c; Pittsburgh, 55c. Washington gauges—Cameron 1, 1244: Smith, No. 1, 191; No. 3, 1183; Barre, No. 1, 624; No. 2, 560; Hall, No. 2, 975; Willets, Munce, No. 1, 550; No. 3, 520; Taylor, 600; Manifold, 460; total production of field 8327 barrels. Farley 2 is through Gordon sand without oil, and drilling for fourth sand.

June 19.—Market opened at 68½c, three-fourths of a cent better than Friday's closing upon report that Washington production was falling off off 1000 barrels a day. It advanced to 69⅜c, fell back to 68⅝c, and at 1 p. m. went to 70c. It then weakened to 69½c, braced up to 70c. It then weakened to 69½c, braced up to 70¼c, and closed at 69⅞c. Carrying rates 55 to 65c. Washington gauges—Cameron, 960; Smith, No. 1, 196; No. 3, 1025; Barre, No. 1, 600; No. 2, 590; Munce, No. 1, 550; No. 3, 500; Clark, No. 2, 600; No. 1, 98; Hall 2, 672; Manifold, 360. Whole field 7546 barrels from 36 producing wells. Pew & Emerson well, on Miller farm, begins spraying a little oil upon exhaustion of the gas pressure. Farley 2 is 2527 feet deep and through the fourth sand with no improvement; is a light gasser. Southwest Pennsylvania Pipe Lines completes its six-inch line from Washington to Carbon Centre, Butler county. James Welsh completes a well at Balltown (warrant 5214) that starts off at 300 barrels.

June 20.—Sunday.

June 21.—Market opened with sales at 71c, the highest point of the day, sold down to 68¾c, and closed at 69⅛c bid. Washington gauges—Cameron 1, 1152; Smith 3, 706; Hall 2, 576. Cameron 2 is ten feet in the sand with no oil. Pew & Emerson, on Miller, stops spraying oil and throws out nothing but salt water. After a month's fishing John McKeown abandons his No. 1, on the Munce, and starts drilling a new hole. Lone Pine well reported through the "fifty-foot" and dry. Goodwin reports gauge of 4889 barrels from 161 wells at Kane.

June 22.—Market opened with sales at 69⅜c and broke to 68⅞c, rallied to 69⅛c, went down to 68½c, up to 69c, off to 68¾c, and closed at 69c bid. Carrying rates 55c at Bradford, Oil City and Pittsburgh, and 20 to 60c at New York. Washington—Union Oil Company, on Clark, through the sand and made 48 barrels last 24 hours. Production of field 7053 barrels. Cameron 1 gauges 1135 barrels. Roberts' well, at Lima, Ohio, said to be doing 375 barrels a day. Taylor, Torrey & Murphy's well, No. 2, on the George Hill farm, strikes the sand and starts flowing at 15 barrels per hour. Phillips Bros'. well, on the Girard farm, southeast of Thorn Creek, 12 feet in the sand and showing for 50 barrels. Judge Brown decides to grant licenses in Warren county, only to hotels and wholesale vendors. All applications, excepting six, are refused to the borough of Warren.

June 23.—Washington again reported off 500 barrels on daily production, and a small rally is made in the market, which opens at 69½c, falls off to 69⅜c, and climbs to 70⅜c. Towards the close there was a small panic and values fell to 68⅞c, firming up and closing at 69⅛c bid. Washington production 6585 barrels for last 24 hours. Smith, No. 1, (old Dyer), is down to 146 barrels, and Clark, No. 2, (Thayer), 400 barrels. Gordon, No. 1, is doing 50 and No. 4, 160 barrels a day. Lovell well, on Alexander farm, Shoustown, through sand and dry. Raccon Oil Company's well, on Stevenson farm, starts at 125 barrels a day. Taylor, Torrey & Murphy's, Geo. Hill, No. 2 well, 18 feet in sand and flowing every twenty minutes. Production about 400 barrels.

June 24.—Market opened very firm at 69¾c, broke to 67⅞c, and closed at 68⅜c bid. Carrying rates 50 to 55c. Washington gauges—Cameron, No. 1, 1100; Hall, No. 2, 670; Barre, No. 1, 600; Clark, No. 2, 624; Taylor, 600; Barre, No. 2, 575; Munce, No. 1, 520 barrels. Whole field 6475. Taylor, Torrey & Murphy well, at Tarkill, drilled through 25 feet of good sand and made 900 barrels first 48 hours. Tank No. 418, containing 18,000 barrels of oil, burned at Rockview. Burning oil ran down the hillside and destroyed four dwelling houses,

two barns and an oil well with a 250 barrel tank. Raccoon Oil Company's well, on Stevenson farm, Shoustown, made 165 barrels first 24 hours. Convention of undertakers holds forth at Warren.

June 25.—Market opened weak at 68c, advanced to 68⅛c, and broke to 67½c, afterwards a small rally occurred which carried prices up to 69⅛c, and the closing quotation was 69c bid. Production of the Washington field reported at 7159 barrels. Cameron 1 doing 1267 barrels. Munhall & Smithman, on Wylie farm, shot and responds at the rate of 50 barrels for the first hour and 70 barrels for the next two hours. Two tanks struck by lightning at the Taylor well and burned with 200 barrels of oil. Terrific storm of rain, accompanied by thunder and lightning, prevails nearly all day throughout Washington county. Fisher Oil Company find a dry hole, near Sarver Station, on the West Penn Railroad, in Butler county. At Grand Valley 114 wells have an estimated output of 900 barrels a day. Warehouse of the Consolidated Tank Line, at Peoria, Ill., containing 40,000 gallons of oil burned to the ground. Fire communicated to a railroad freight house and it and thirty cars destroyed; loss, $200,000; fully covered by insurance.

June 26.—Market opened weak at 68⅝c, broke to 68½c, and then firmed up to 69⅜c. It fell off to 68⅞c, and then to 68⅝c, rallied and closed at 69c bid. Washington—Total production of field from 36 wells 7951 barrels. Gauges—Gordon 4, 150; Hall 2, 672; Barre 1, 504; Barre 2, 525; Taylor, 576; Smith 1, 167; Smith 3, 846: Cameron 1, 961; Manifold, 380; Clark 2, 565; Munce, No. 1, 460; No. 2, 2; No. 3, 480; No. 4, 40; No. 5, 60; M. & S. Wylie, 984 barrels. Southwest Pennsylvania Pipe Line commence running oil through their six-inch line to Carbon Centre. Tarkill—T. T. & M., No. 2, on George Hill farm, made 337 barrels in last 24 hours. No, 4 is 15 feet in sand and flowing at 600-barrel rate. A 600-barrel tank containing 300 barrels of oil from No. 4, fired from boiler and destroyed. Clark & Foster, No. 1, on Huff, made 80 barrels first 24 hours. W. B. Roberts levies on the Titusville *Herald* for satisfaction of a mortgage of $9,000 on account of Editor Bloss' hostility to Roberts' political aspirations for a place on the Republican State ticket.

June 27.—Sunday. Mrs. Mark Sheldon fatally burned at Corry by the explosion of a gasoline stove. C. H. Rathbun & Co.'s well, on lot 382, Kane, 20 feet in sand and showing for light well.

June 28.—Market opened firm at 69c, broke to 68⅛c, and closed at 68¼c. Carrying rates—Bradford, 55 to 60c; New York, 45 to 50c; Oil City and Pittsburgh, 55c. Washington—Cameron 2 is 65 feet in the sand with but a small showing of oil; Cameron 1, gauges 971; Smith 3, 912; Clark 2, 600; Taylor 1, 555; Hall 2, 516; Munhall & S., on Wylie, 557; Manifold, 340 barrels. A postoffice is established at Shannopin, in Beaver county, the new city of the Shoustown or Shannopin oil field, which is christened Ethel's Landing by authority of the Postoffice Department, Washington.

June 29.—Market opened firm at 68⅜c fell off to 67⅝c and rallied to 68c. It then gradually weakened until 66⅞c was touched, and closed at 67c bid. Carrying rates 45 to 60c. Washington gauge 7283 barrels. Willets, No. 4, Munce, shot and made 28 barrels first hour. In the evening was doing 18 barrels an hour. All the big wells doing less than 1000 barrels apiece. Canning, No. 2, Judge McCalmont farm, Tarkill, through sand and dry. Martin Seitz, of Saxonburg, Butler county, aged 58 years, suicides by taking Paris green.

June 30.—The market opened steady at 67c, advanced to 67⅜c, weakened to 66⅞c, rallied to 67⅜c, vibrating around this figure till 11 a. m. At 11:10 a. m. it advanced to 68c. From this time up to 1 p. m. the market was confined between 68c and 67⅝c. At 1:45 p. m. the 68c point was again scored, when it broke to 67¾c and fluctuated around this figure till the close, closing at 67¾c bid and sales. Carrying rates—Bradford, 60 to 65c; New York, 60c; Oil City, 50 to 55c; Pittsburgh, 50c; Washington gauges—Barre, No. 1, 480; Barre, No. 2, 480; Cameron, 948: Smith, No. 3, 738; Smith, No. 1, 153; Manifold, 356; Munce, No. 1, 452; Munce, No. 3, 500; Munce, No. 4, 288; Taylor, No. 1, 515; Clark 2, 618; Hall, 513; Wiley, 288.

A New Refinery at Olean.

The Knights of Labor have taken decided steps for the establisment of an oil refinery at Olean. According to the Times: "A tract of eleven acres of land, upon which the plant will be located, has been purchased of Henry White. It is a very desirable site for the purpose, and is situated at the junction of the Erie and B., N. Y. & P. railroad tracks, directly opposite the Olean chemical works, thus affording the very best shipping facilities. Work was begun June 2 in clearing the land and getting it in shape for putting up the buildings.

The corporate name will be the 'Knights of Labor Co-operative Oil Refinery Company.' The affairs of the enterprise will be managed by a Board of Directors, chosen from the various local assemblies whose members are stockholders. The president of the company is L. C. Pitts, of Richburg, and the secretary F. F. Brown, of Eldred. The capital stock is $50,000, of which $30,000 has been taken by the Knights, and a considerable amount already paid into the treasury. It is expected that the capital stock will be greatly increased as the enterprise progresses."

Annual Report of the Philadelphia Oil Exchange.

The third annual report of the Philadelphia Petroleum Exchange has been issued. The present membership of the Exchange is 223. The receipts for the year were $11,182 and the balance to credit of general account now on hand is $603.20. The cash assets are now $5,906.20, with no habilities. Four members died during the year and their heirs were paid $1,000 out of the gratuity fund. The listing of railroad stocks on the Exchange is declared to have been a great success. The Clearing House reports sales for the year ending May 31 of 285,543,000 barrels of petroleum and 28,860 shares of railway stocks for the month of May, after the 11th, when they were first listed. The commission charged is one-sixteenth of one per cent., or about half that of the Philadelphia Stock Exchange.

THE People's Gas Company, of Warren, Pa., after drilling one well at Ludlow, has effected a consolidation with the Pennsylvania Gas Company, which promises to make a reduction of about 35 per cent. from its present rates to consumers. The organizers of the People's Company claim that the failure of numerous stockholders to pay their subscriptions was the principal reason for their action. Horton, Crary & Co., the great tannery firm of Sheffield, held one-quarter of the stock of the People's Company. By this arrangement they obtain a goodly slice of Pennsylvania stock, and the Pennsylvania Company becomes the possessor of about 20,000 acres, in one body, of the best gas territory in the State.

Orton on Lima oil field

Orton

The State Geologist on the Lima Oil Field.

[*From the Lima (O.) Times.*]

The Lima oil field is assuming so much importance that all the facts pertaining to it are acquiring interest and value. I wish to call attention to a few conclusions, negative and positive, that seem to be warranted by my study of the field thus far. These conclusions are, of course, open to correction and change as new facts may demand.

1. I see no reason to believe in any continuous belts of oil or gas accumulation. Two places can always be joined on a map by a straight line, but I see no significance in any lines that can now be drawn. Gas and oil are two forms of one substance. Wherever one is, the other is not far away. Therefore, the Findlay and Bowling Green gas fields must be counted in under the same system with the oil field proper. The first two places, if connected, will give a north and south line, but that line fails when extended in either direction, and also has been found unproductive at a point in the middle. Again, Findlay and Lima can be connected by a line, but the line is a rope of sand, though not of "oil sand," as a half dozen experiments have demonstrated. Further than this, the line of great dip at Findlay, which is the heaviest known in the State, bears north 14 degrees west, as far as it extends through the town.

2. The most important facts that are coming to light in regard to the several centres of production bear upon what the geologists call structure, that is the position of the productive rock, its bends or folds or underground terraces. The Findlay field consists of two terraces of Trenton limestone, the upper one of which is about 310 feet below sea level, and the lower about 460 feet below. The slope of 150 feet that connects them is about a half mile in length; on the upper terrace, dry gas and moderate wells are found.

On the slope and a little ways down, the great gas wells, the Karg, Cory, Briggs wells, all occur.

Further down the slope the wells yielded gas at first, but are turning into oil wells as the Adams and Lima road wells.

Lower still the wells are counted oil wells rather than gas wells, or they produce salt water only.

The four greatest wells thus far found at Findlay and in its neighborhood are the following, viz:

	Cubic feet.
The Karg well which yields daily	12,080,0 0
The Cory which yields daily	3,318,000
The Bloomdale well which yields daily	2,750,000
The Briggs well which yields daily	2,565,000

The top of the Trenton limestone in these wells is 347, 350, 360 and 450 feet below sea level respectively. At 400 feet, as before stated, oil seems to gradually overpower the gas, and at 460 to 480, the Matthias and other oil wells proper come in. Structure seems equally important at Lima. I have obtained the elevation of the first seventeen wells drilled in the field, through the courtesy of the Trenton Rock Oil Company, and Mr. J. C. McCullough, and I have also obtained the facts as to the depth at which the Trenton limestone was struck in these wells. Reducing these last series to sea level, it appears that the producing rock ranges in this field (extending to Beaver dam) from 390 feet below the sea to 445 below. These first seventeen wells can be grouped in four classes:

1. Wells that flow when first drilled.
2. Wells that flow when shot.
3. Wells that require pumping.
4. Wells that are unproductive.

The wells of the first group show the limestone 390 feet below sea level. In the second group, the Trenton has 393 or 394 feet below sea level. In the third group, the rock is found 395 or 396 feet below the sea. There is not a well found in the Lima field (of the first drilled), in which the limestone lies 400 feet or more below the sea level. Of the seventeen wells first drilled seven are unproductive. In these seven the Trenton limestone was found respectively at 400, 403, 406, 407, 421, 422 and 445 feet below sea level. It is not to be expected that this set of figures will extend indefinitely beyond the Lima field. Other fields will develop new sets, probably, but thus far the oil and gas of Northwestern Ohio come from the Trenton rock, where it lies between 310 and 480 feet below the sea. The conclusion may be already invalidated in the Lima field to some extent by the wells whose records I have not been able to reduce, but most of the new wells seem to be conformable to the facts already stated.

3. The nature of the surface gives no hint as to the level at which the lower limestone can be found. Nothing but the drill, so far as now appears, can show the depth of the limestone, but the use of the drill can be restricted to some extent. One well may show a condition of the rock as to level, and that gives no encouragement to proceed with further exploration.

Respectfully yours,

EDWARD ORTON.

LIMA, Ohio, June 19, 1886.

A Petroleum Test in Russia.

Until recently the Russian government did not interfere with the quality of kerosene marketed there. The largest Russian oil firms made it a rule to deal only in oil of 25 deg. C. (77 deg. F.); yet there were some producers who used to send oil of an inferior quality both to home and foreign markets. The result is that in Asia Minor, for instance, Russian oil is regarded as dangerous stuff. In Russia, too, there have been many cases of fire, and even of loss of life, caused by oil explosions. In view of this, respectable oil firms (the Nobels and others) and governors of Moscow, of Odessa and other cities, have petitioned the imperial government to fix a standard of kerosene. A special committee has reported to the government that in different countries there are different standards of kerosene, as defined by the flash point, namely, in Germany, 21 deg. C.; in England 23 deg. C.; in France and Switzerland, 35 deg. C.; in Austria and the United States (some States), 37½ deg. C. (about 100 deg. F.), and that it would be safe to adopt as a standard kerosene which would not flash on being heated (Abel test) to 28 deg. C. (82.4 deg. F.) Accordingly the government has recently ordered that no kerosene shall be sold henceforth at home or exported which is below that standard. Russian crude oil yields about 30 per cent. of refined against 75 per cent. yielded by American oil, and now, at the increased standard, it will yield still less unless a heavier illuminating oil be produced, as suggested, in Russia, namely, instead of oil of .821 specific gravity, one of .825. In other words, it is suggested to mix solar oils with kerosene proper. The law fixing a standard of kerosene "caused a panic" at Baku. According to the Baku *News*, lately received, petroleum was selling there at 2c per gallon, in tank. When the law was announced the price dropped to ⅞c per gallon, with a downward tendency remaining. There are large quantities of oil stored there which cannot stand the required test, and which, therefore, it will be necessary to refine again or, as some Armenian oil men suggest, to pour it into the sea.—*Bradstreets.*

The Refined Market.

June proved a quiet month in the refined market, with prices close to the 7 cent point for 70° Abel test oil. The foreign buyer carefully scans the situation in crude and is exceeding wary in making his purchases.

Reports of Russian invasion of the European market are again freely discussed. A steamer loaded with 18,000 barrels of Russian refined, bound for England, has been cleared at Batoum, on the Black Sea. It has been reported that the Standard Oil Company was making arrangements with the Nobel Bros. for a union of American and Russian interests on the refined question.

On the subject of Russian oil practically supplanting American in Europe, the *British Trade Journal* says: "There appears to be little doubt that American petroleum will be entirely supplanted by the Russian product, not in Egypt and the Orient only, but throughout the whole of Europe. Already 'tank ships,' specially fitted for the conveyance of petroleum in bulk, are running from the Black Sea to Italian and Belgian ports; and, unless a war should interfere, this development of Russian trade promises to continue. Nothing seems to be neglected to assist the movement, among the latest projects being one by the Imperial Russian Technical Society, which is making preparations for a petroleum exhibition to be held at St. Petersburg."

A reference to the tables published below will show that the exports of American refined have not yet suffered to any considerable extent from the Russian article. Very little oil the present year has been shipped to Austria and Italy, which receive the bulk of their supply from Russia, but the loss in these instances is more than made good by the increase elsewhere.

A heavy refiner gives the following glowing prospect for the refined market in the future: "It is well known that the Standard has been trying hard to form a pool with the Nobel's. It may be formed in the near future, but I doubt the feasibility of the scheme just now. There is a prospect that refined will soon be largely shipped in bulk. Four or five bulk steamers, to ply between New York and Europe, are now being built in England. As soon as they arrive here the shipment of oil in bulk will begin in earnest. Our company has shipped two or three cargoes to the continent in bulk vessels, and as far as we know the scheme is a success. For the season the trade is brisk. In July the heavy export demand will begin to set in. From that time until October the shipments will continue to largely increase, and I anticipate a prosperous season. Before many months roll by 8 cents will probably be paid for the article."

The exports of refined, crude and naphtha, from all ports, from January 1 to June 3, have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	2,868,733	4,123,782
Philadelphia	71,227,188	69,408,071
Baltimore	6,913 321	5,254,973
Perth Amboy	1,593,770	---------
Total	82,603,012	78,786,826
From New York	195,236,122	181,724,666
Total exports from United States	277,839,134	260,511,492

Refined oil for the home trade is in moderate demand. Quotations are 7c. for 110° test, 7¾ to 8c. for 120° test, 8½ to 9c. for 130° test, 9c. for N. Y. State test, Standard white and 9¼ to 9½c. for 150° test, water white. Western lots of naphtha are offered at 7¼ to 7¾c. delivered in New York. Refined in cases is in fair request with quotations at 8¾ to 9⅞c., according to brand. The clearances for June in this class of goods to China and the East amounts to 1,419,352 cases, an increase of 303,038 cases over the same month in 1885. The total clearances up to June 30th are 7,684,492 cases, an increase of 2,286,994 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 30th of June, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	2,194,007	1,568,024
JAPAN	1,088,254	1,002,581
INDIA	2,345,563	1,714,316
JAVA, SINGAPORE, ETC.	2,056,668	1,112,577
Total June 30	7,684,492	5,397,498
Total May 31	6,265,140	4,281,184
Clearances for June	1,419,352	1,116,314
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,986
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	7,684,492	5,397,498

REFINED QUOTATIONS FOR JUNE.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	7	7	7	6	6 25	15⅞
2	7	7	7	5⅝	6.25	15⅞
3	7	7	7	5⅝	6.30	15⅞
4	7	7	7	5⅝	6.30	15¾
5	7	7	7	5⅝	6.30	15¾
6						
7	7	7	7	5⅝	6.30	15¾
8	7	7	7	5⅝	6.30	15¾
9	7	7	7	5 11-16	6.30	15¾
10	7	7	7	5 11-16	6.30	15¾
11	7	7	7	5 11-16	6.30	15¾
12	7	7	7	5 11-16	6.30	15¾
13						
14	7	7	7	5⅝	6.35	15¾
15	7⅛	7⅛	7⅛	5⅝	6.35	15¾
16	7⅛	7⅛	7⅛	5⅝	6.40	16
17	7⅛	7⅛	7⅛	5⅝	6.40	16
18	7¼	7¼	7¼	5⅝	6.40	16
19	7¼	7¼	7¼	5⅝	6.40	16
20						
21	7¼	7¼	7¼	5⅝	6.45	16¼
22	7¼	7¼	7¼	5⅝	6.40	16¼
23	7¼	7¼	7¼	5 11-16	6.40	16¼
24	7¼	7¼	7¼	5 11-16	6.40	16¼
25	7¼	7¼	7¼	5⅝	6.45	16¼
26	7⅛	7⅛	7⅛	5⅝	6.45	16¼
27						
28	7⅛	7⅛	7⅛	5⅝	6.45	16¼
29	7⅛	7⅛	7⅛	5⅝	6.40	16¼
30	7⅛	7⅛	7⅛	5⅝	6 40	16¼

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80¾	77½
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅝	69⅞
June	68¾	100¼	81	54½	117¼	68¾	82¼	67
July	69⅞	101¼	76½	57⅝	108	63½	96⅜	-----
August	67¼	90¾	78⅔	58⅔	108⅔	81 1-5	100⅜	-----
September	69¼	95½	92¼	71⅓	112½	78	100¾	-----
October	88⅛	96¾	92¾	93⅝	111⅛	71	105½	-----
November	105⅜	91¼	82¼	114¾	114 4-5	72½	104⅞	-----
December	113¼	92⅜	83¾	95¼	114⅓	74⅝	89⅝	-----

THE total exports of petroleum from America, in gallons, according to a German circular, from January 1 to June 4, have been as follows:

	1886.	1885.
To Europe	142,439,962	144,915,379
To East Indies, etc	69,920,800	49,763,972
Total	212,360,762	194,679,351

Notes on Recent Publications.

On Viscosimetry, or Viscometry, Emmot & Co., Manchester, Eng.: Mr. Boverton Redwood, F. I. C., F. C. S., has lately published a lecture of his "On Viscosimetry, or Viscometry," which treats in a practical manner of the determination of the comparative value of oils used for lubricating purposes.

Popular Science Monthly for July, D. Appleton & Co., New York: The July number of this standard scientific publication contains a valuable and interesting essay on "Transportation and the Federal Government," by John C. Welsh. Mr. Welsh takes the position that "transportation is legitimately a subject of government—a branch of government—this as distinguished from a mere matter of commercial enterprise." * * * "Let the incentive of ambition, of avarice, if you will, be keen to the last, but hedge the opportunities so that no one man's opportunity greatly exceeds that of others; put the strain not on getting a living, a competence, but on getting enormous multiplies of these." * * * * "This country now confronts the problem of too great power in the hands of the wielders of transportation—they thwart the first principles of our Government, and the iron of oppression has entered into the soul of our people." Mr. Welsh has presented a careful analysis of a very important subject, in a thorough and interesting manner. The problem is one that must be solved eventually, if a free people is ever to remain free.

Geological Survey of Pennsylvania. Report of the State Geologist for 1885. Prof. Lesley in a pamphlet of forty pages, details the progress of the Geological Survey of the State since 1874. It serves as a preface to the larger volume of 847 pages, and atlas of eight large maps and charts, which is shortly to be published. The survey was commenced in 1874 in Venango and adjoining counties, and has continued on from that time until the survey of all the counties has been made, with the exception of parts of Forest, Tioga, Bradford, Union and Snyder, which could not be finished for want of funds. The total appropriation for the work, for thirteen years, was $545,000. In eleven years the survey has published sixty-seven large volumes and a number of atlases and charts. In regard to the publication of a geological map of the State Prof. Lesley says: "Materials for a permanent geological map of the State have been collected during the course of the survey, but we have no good topographical base for such a map. The best map of the State, which is now in existence, is based upon a map made by authority of the Legislature, by an act approved the 19th day of March, 1816. This was known as Melish's State map, and it has furnished the frame work of all subsequent maps of the State which have been constructed. Not a single county in the State is correctly mapped. In constructing a State map, these county maps might be combined, but, as they are all incorrect, they will not fit together." The need of a thorough topographical survey of the State is a pressing one and should not longer be delayed. The expense is an unimportant item when the value of such a survey to a State so rich in mineral resources as Pennsylvania is considered.

Geological Survey of Ohio. Preliminary Report upon Petroleum and Inflammable Gas, by Edward Orton, State Geologist, published by authority of the Legislature. Volume VI of the Geological Survey of Ohio will not be completed until February 1 1887 It will contain nine chapters and consist of about 500 pages with numerous maps and illustrations. The above paper is a preliminary report of timely importance on the recent oil and gas developments in the northwestern part of the State, in which the author discusses the origin of petroleum and gas. Prof. Orton holds that petroleum never exists free from gas, and that if the dryest gas yet discovered could be followed, its remote source would be found in an accumulation of oil. There is no horizon known that produces either substance to the exclusion of the other.

Crude Market for June.

There was little of interest to note in the crude market during the month recently closed. Kane for the time being, as a factor in production, was lost sight of, and crude quotations hinged almost entirely on the daily gauges of the Washington county wells. The total yield of all fields is once more in advance of the consumption, as shown by the shipments, and the old story of increasing stocks is again a powerful agent in depressing prices. The Lima field is generally regarded as holding out possibilities of supply for the future, if the superior product of the Pennsylvania regions should ever prove unequal to the demand.

The month of June opened with crude certificates ranging from 62¼ to 62⅝ cents, which proved the lowest prices of the month. There was a steady advance until 67¼c was reached, when the market again fell off. Up to June 17 there was little prospect of its rising out of the sixties, the range being between 68⅜c and 64⅜c. On the 18th, upon receipt of bullish news from Washington, the market advanced to 68½c and closed at 67¾c. The day following it reached 70¼c, and on the 21st some sales were made at 71c on the Bradford Exchange. This was the highest for June, the month closing with quotations at 67⅝c to 67¾c. The lowest quotation for May was 62c, and the highest 74⅝c.

The range of prices for June was 8¾c as compared with 12⅝c in May, 7½c in April, 9½c, in March, 9⅞c in February, 10½c in January, 8⅜c in December, 23⅞c in November and 12½c in October. The average price on the floor of the Bradford Exchange was 67c in June, against 69⅞c in May, 74c in April, 77⅛c in March, 80c in February, 88¼c in January, 89⅝c in December, $1.04⅜ in November, and $1.05½ in October. The average price for June one year ago was 82¼c.

THE CLEARANCES.

	June. Barrels.	May. Barrels.
Bradford Oil Exchange	47,888,000	33,159,000
Oil City "	91,042,000	83,700,000
New York Consolidated Exchange	194,693,000	180,354,000
Pittsburgh Petroleum Exchange	77,316,000	61,201,000
Philadelphi Oil Exchange	16,643,000	15,695,000
Total	427,582,000	374,109,000

Officers of New York Petroleum Exchange.

The annual election of the New York Consolidated Stock and Petroleum Exchange occurred June 14th. The following is the list of officers:

President, Charles George Wilson; First Vice-President, Frank Tack; Second Vice-President, Thomas L. Watson; Treasurer, John Stanton; Chairman, A. W. Peters.

Arbitration Committee—S. T. Hubbard, Jr., D. K. Young, J. E. Barrow, Jr., W. L. Jaques, E. S. Munroe, C. J. Fraser, G. G. Renville.

Trustees of Gratuity Fund—Two years, M. N. Day; five years, L. H. Smith, C. F. Schramme.

Directors, to serve one year—G. W. Hoagland, S. F. Strong, N. Campbell, F. H. Gould, S. G. Nelson, G. P. Townsend.

To serve two years—J. M. Moore, G. H. Lincoln, A. W. Peters, R. A. Chesebborough, G. W. Fuller, Jr., H. H. Curtis, W. F. Moller F. G. Salonstall, Nic Mehle 1, F. T. Adams, J. L. Anthony, W. C. Hendrie, J. A. Macpherson, G. W. Roosevelt, Jr., J. Gutman, M. Lautenbach, G. L. King, A. B. Macfarlane, Minot Mitchell, B. S. Mendels, C. W. Baker, D. Bettman, C. F. Thumm, E. P. Moxey and J. C. Maben.

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	June 19, 1886 Barrels.	May 29, 1886. Barrels.
Seven Continental Ports	1,105,421	936,341
London	199,664	217,785
Trieste	------	8,418
Total Stocks afloat and ashore	1,305,085	1,162,544
Increase in stocks since May 29	142,541	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS JUNE 19, 1886.

PORTS.	Stocks week ending June 19.		Stocks afloat week ending June 19.		Loading. Week ending June 19.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	90,084	118,289	7,281	65,575	30,500	15,800	127,865	199,664	503,389	679,424	598,769	664,368
Trieste	------	------	------	------	------	--	------	------	------	------	------	------
Bremen	409,555	200,884	54,011	18,532	48,000	35,600	511,566	255,016	648,127	609,383	969,952	856,560
Hamburg	139,278	130,418	105,676	75,867	59,000	60,400	303,954	206,685	982,124	908,233	1,017,407	958,649
Antwerp	81,775	192,839	43,240	9,906	31,560	53,700	156,515	256,445	926,539	988,390	1,010,057	906,968
Rotterdam	39,242	90,985	47.313	25,719	24,500	31,800	111,055	148,504	226,332	454,384	249,881	432,326
Amsterdam	24,942	67,812	34,595	5,500	------	19,500	59,537	92,812	228,422	308,897	244,416	268,456
Stettin	20,618	8,208	74,474	25 672	14,500	40,400	109,592	74,280	236,002	254,849	252,001	305,053
Danzig	2,334	1,839	16,194	9,840	4,000	------	22,528	11 679	71,312	59,078	77,970	72,506
Total	717,744	692,985	375,503	171,036	181,500	241,400	1,274,747	1,105,421	3,318,855	3,583,214	3,822,634	3,800,527

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,620,970	1,282,202	717,744	692,985
Total afloat, " "	250,300	319,717	375,503	171,036
Total loading	162,300	188,200	181,500	241,400
Total	2,033,570	1,790,119	1,274,747	1,105,421
Afloat and loading for direct Continental Ports	----	39,700	29,600	38,900
" " " Baltic Sea, exclusive Stettin and Danzig	27,400	88,200	78,300	54,600
" " " Total Continental Ports	2,060,970	1,918,019	1,382,647	1,898,921
" " " Total London	471,628	252,943	127,865	199,664
" " " English harbors, exclusive London	90,400	46,900	24,700	97,600
Grand total	2,622,998	2,217,862	1,535,212	1,496,185

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, MAY, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., JUNE 9, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS		ILLUMINATING.		LUBRICATING & PARAFINE OILS.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	------	------	------	------	284,675	30,637	13,830	3,552	------	------	298,505	34,190
New York, N. Y	2,111,710	149,250	182,879	17,421	28,913,714	2,398,130	1,303,557	230,679	------	------	32,511,860	2,795,473
Philadelphia, Pa	4,602,352	297,495	102,440	8,195	8,293,159	642,243	19,292	2,532	159,600	9,758	13,178,843	960,223
Baltimore, Md	--------	-------	--------	-------	525,180	38,403	40	22	------	------	525,220	38,425
San Francisco, Cal	--------	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	-------
All other districts	----	-------	--------	-------	--------	--------	--------	-------	-------	------	--------	-------
Total for May, 1886	6,714,062	446,745	285,319	25,616	38,018,728	3,109,413	1,336,719	236,779	159,600	9,758	46,514,428	3,828,311
Total for May, 1885	5,883,962	420,237	1,388,322	102,347	41,932,616	3,619,649	1,444,009	255,435	1,336,902	83,364	51,985,811	4,481,032
Total for 11 months ending May 31, 1886	73,541,414	5,413,899	11,148,954	882,010	415,961,215	36,221,526	11,149,389	2,218,873	2,961,378	173,905	514,762,350	44,910,213
Total for 11 months ending May 31, 1885	75,601,406	5,515,149	14,630,234	1,164,084	410,413,454	35,816,081	11,796,333	2 392,987	5,929,770	337,664	518,420,217	45,225,265

CRUDE QUOTATIONS FOR JUNE, 1886.

Day of Month and week.	BRADFORD. Opened	Highest	Lowest	Closed	OIL CITY. Opened	Highest	Lowest	Closed	NEW YORK. Opened	Highest	Lowest	Closed	PITTSBURGH. Opened	Highest	Lowest	Closed
T 1	62¼	65⅝	62¼	65⅛	62⅝	65½	62⅜	65⅛	62½	65½	62⅜	65⅛	62½	65⅝	62½	65
W 2	64⅞	67¼	64¾	65¼	65	67⅛	64¼	65¼	65⅛	67¼	64⅛	65¼	65¼	67¼	64¼	65¼
T 3	65¼	65⅝	64¾	64⅝	65	65¾	64⅜	64⅝	65	65¾	64⅜	64⅝	65⅛	65¾	64½	64¾
F 4	64⅝	66⅝	64⅝	65½	64¾	66⅝	64¾	65¾	64⅜	66⅝	64⅝	65⅝	64⅞	66½	64¾	65⅝
S 5	65¾	65⅞	64⅞	65	65¾	65⅞	64⅞	65¼	65⅝	65⅞	64¾	65½	65⅝	66	64⅞	65½
M 7	65⅜	65⅝	64¾	64⅞	65	65⅝	64⅝	65	64¾	65¾	64⅝	65	65	65⅝	64¾	65
T 8	65⅜	66¾	65⅜	66⅜	65¼	66¾	65¼	66½	65¼	66⅝	65¼	66⅜	65½	66¾	65½	66⅝
W 9	66⅜	66½	65⅜	65⅜	66	66⅝	65½	65½	66⅞	66⅝	65⅜	6 ½	66¼	66½	65½	65½
T 10	64½	64⅞	64⅜	64⅝	64⅞	65	64½	64¾	64¾	65	64¼	64⅞	64¾	65	64⅜	64¾
F 11	64⅞	66⅜	64⅞	66	64⅜	66⅜	64¾	66⅛	65	66⅜	64⅞	66⅛	65⅛	66¼	65	66
S 12	65	65⅝	65	65¼	64¾	65⅝	64¾	65¼	65	65½	64¾	65¼	64⅞	65½	64¾	65⅜
M 14	66¼	68⅜	66¼	68⅛	66	68⅛	66	68¼	66	68⅜	66	68¼	64¼	68⅜	66¾	68½
T 15	68¼	68⅜	67	67⅛	68	68⅜	67	67¼	68	68¼	67	67¼	66¾	68¼	67	67⅜
W 16	67¼	67⅝	66⅝	66⅞	67⅛	67⅞	66⅝	67	67	67¾	66⅝	67	67⅝	67¾	66⅝	66⅞
T 17	67	67⅝	66½	67½	67	67⅝	66½	67½	66¾	67¾	66½	67⅜	66⅞	67⅝	66½	67½
F 18	67⅝	68½	67⅜	67¾	67⅝	68⅜	67⅜	67¾	67½	68½	67⅜	67⅝	67⅝	68½	67½	67¾
S 19	68½	70¼	68½	70	68⅜	70⅜	68⅜	70	68½	70¼	68½	69⅞	68¼	70¼	68¼	70
M 21	71	71	68¾	69⅛	70¼	70⅝	68¾	69	70¼	70¾	68⅝	69⅛	70½	70⅝	68⅝	69⅛
T 22	69⅜	69⅜	68½	69	69⅛	69½	68½	69	69⅞	69½	68½	69	69⅜	69⅜	68½	69
W 23	69½	70⅜	68⅞	69⅛	69⅝	70¾	68⅞	69	69½	70¾	68¾	69⅛	69¼	70⅜	69	69
T 24	69¾	69¾	68⅜	68⅜	69¾	69⅞	67⅞	68¼	69⅞	69⅞	67⅞	68⅞	69¾	69¾	67¾	68¼
F 25	68	69¼	67¼	69	67⅞	69	67¼	68⅞	67⅞	69	67	69	68	69	67⅝	68⅜
S 26	68⅝	69⅜	68¼	69	68¾	69¾	68½	69	68½	69⅞	68¾	69	68¼	69¼	68⅝	68¾
M 28	69	69	68¼	68¼	69	69¼	68	68¼	69¼	69¾	68	68¼	69¼	69¼	68	68¼
T 29	68⅜	68⅜	67⅞	67	68¼	68¼	66⅞	67	68⅛	68⅛	67⅞	67¼	68¼	68¼	66⅞	67
W 30	67	68	66⅞	67¾	67⅞	68	67	67⅝	67⅛	68⅛	66⅞	67⅝	67⅛	68⅛	67	67⅝

THE PETROLEUM AGE,

DEVOTED TO THE

INTERESTS OF THE PETROLEUM TRADE.

PUBLISHED MONTHLY BY

McMULLEN, SNELL & ARMOR,

BRADFORD, PA

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The Bradford office of the AGE is in the Producers' Exchange Building.

THE MERRILL STANDARD PRESSURE REGULATOR.

THE natural gas industry is a legitimate outgrowth of the petroleum business, but while petroleum has been a commercial product, for a quarter of a century, it is only a comparatively short time, since the great value of natural gas has been utilized. One of the first problems presented after the finding of this fuel in almost inexhaustible quantities was a means of regulating and controlling pressure. For a time the gasometer was alone considered a positive and reliable agent, numerous patented valves for steam and water having been tested and pronounced unavailable for handling the new fuel.

A knowledge of the advantages possessed by a compact valve mechanism, over the bulky and cumbersome gasometer stimulated invention, with the result of scoring a positive success in the Standard Pressure Regulator. This compact little machine maintains a constant and unvarying pressure on the outlet side, no matter what may be the force exerted at the source of supply. Its use does away with all danger in the household that desires to enjoy the comfort and luxury of nature's cheap and abundant fuel.

The Standard Pressure Regulator possesses many other points of advantage that are to be seen at their best by observing it in practical operation. A spherical chamber, attached to the side of the machine, contains a small tube with the end sealed in mercury; it operates as a perfect safety valve, and permits the escape of the gas, in case from any cause whatever the regulator valve should fail to seat. The use of the mercury obviates all chances of corroding, and in this respect the instrument is superior to any "blow-off" or "pop" valve that can ever be devised. In short, as the inventor boldly proclaims, "it is always ready." Another important attachment is the "cut-off valve," which prevents the return of gas to the fire-place, when unexpectedly the supply in the main line is shut off and again turned on. Special sizes are made for use in large mills and factories.

The inventor, Mr. E. C. Merrill, is a young man and a practical mechanic, who has a large acquaintance in Bradford, having for several years enjoyed the tutelage of Mr. George W. Rose. He is at present the engineer of the Wheeling Natural Gas Company. Full particulars of the Standard Pressure Regulator may be had by addressing E. C. Merrill & Co., 5919 Broad street, Pittsburgh, Pa.

Trade Notes

Captain John S. Hunter, a refiner of twenty years experience, has patented a new elastic lining, which is to take the place of glue in preparing barrels for the reception of refined or crude petroleum. It is cheaper than glue and will not crack when the hoops of a barrel are loosened or driven. A barrel can be handled twice after receiving a single application of the elastic lining. The refiners of the Oil Creek Valley have made purchases from Captain Hunter and are giving it a trial. It is manufactured by W. H. Magoffin & Co., 319 Walnut street, Philadelphia.

Mr. A. McLean has accepted the general agency for the sale of George W. Tifft, Sons & Co.'s boilers and engines in the oil region. Mr. McLean has been identified with the company for seventeen years, and is well and favorably known by the many patrons of the firm. He will have headquarters in Bradford, and from this point Mr. C. U. Brett, the efficient salesman, will make excursions among the producers. Mr. R. H. Boughton, for a long time general agent for the Tifft's, relinquishes the position to devote himself to the manufacturing business in Titusville.

The Climax sand reel and rig irons meet the demands of the deep drilling in the Kane and Washington fields. The Climax engine is also a favorite on the Kane summit, and is giving satisfaction. Mr. Battles has the inventive genius and the executive ability of a successful manufacturer.

Messrs. Clark & Warren, the painstaking and scientific manufacturers of fine grades of illuminating and lubricating oils, are enlarging their extensive works at Corry, Pa. In a few weeks two new 500-barrel stills and an agitator of 500 barrels capacity will loom up in the yard.

Manager G. N. Barnes, of the Corry City Iron Works, reports a want of men and a rush of business in their boiler department. They have just finished two large boilers for the new water works of the city. Mr. James Lambing, the agent for the sale of their boilers, is a hustler in the field.

Harmon, Gibbs & Co., manufacturers of the Ajax engine, have just completed an addition to their building, 45 feet by 110, which is to be used as a moulding room and foundry.

The wheels of toil are vigorously urged at the Oil City Boiler Works, and Manager Geary reports that they are behind with their orders. Their new steel boilers are a taking card with producers.

Summary of Daily Pipe Line Runs for June and May, 1886.

The following table shows at a glance to which districts the large increase in the pipe line runs for June may be credited. The estimate for Baldridge is based upon the runs of the National Transit Company, which were 1339 barrels in June, and an approximate estimate of the Pittsburgh Pipe Line, which includes all the oil run from Butler county, under one head:

	June.	May.	Increase.	Decrease.
Allegany	6,981	6,535	446	----
Bradford	28,790	27,552	1,238	----
Cherry Grove	344	338	6	----
Balltown	1,104	1,376	----	272
Cooper	605	591	14	----
Baldridge, estimated	1,725	1,668	57	----
Kane	5,702	4,475	1,227	----
Cogley	2,936	3,258	----	322
Tarkill	1,262	915	347	----
Red Valley	1,181	1,260	----	79
Pontius	2,3[illegible]0	----	----	----
Washington	8,022	5,397	2,625	----
Shannopin	272	231	41	----
Smith's Ferry	6	13	----	7
Mt. Nebo	8	6	2	----
Macksburg	2,139	1,890	249	----
Other fields	14,563	1,4987	----	424
Total	77,990	70,492		
Lima	795			
Total with Lima	78,785			

THE PRODUCING REGION.

At the beginning of June there were 186 new rigs and 407 drilling wells in the entire region, a total of 593. The number of wells completed in June was 372, with an estimated production of 9027 barrels. The dry holes were 56, leaving 316 productive wells, with an average yield of 27¼ barrels. During May the entire region completed 294 productive wells and 57 dry holes, and the average of the new wells May 31 was 39½ barrels. These figures show an increase of 21 wells completed and a decrease of 2561 barrels in the new production. The falling off in the gusher wells at Washington and drainage of the Kane field is responsible for a drop of 4641 barrels, but new developments at Tarkill, in Venango county, increase the production of this section over 1800 barrels, and partially offset the decline in McKean and Washington counties. In June, 1885, 256 wells were completed, with a new production of 3182 barrels; the dry holes numbered 31. At the close of June there were 198 new rigs, 143 old rigs and 402 drilling wells in the New York and Pennsylvania oil regions as compared with 186 new rigs, 137 old rigs and 407 drilling wells at the close of May.

Kane has considerable territory remaining to drill on the north, but it is of such a character as to afford only wells of comparatively small calibre. The Washington field probably has a few more surprises in store, but the field is fairly well defined on two sides, and its future extension must lie to the southeast of the Smith end of the field or northwest of the Gordon portion. The eastern belt in Butler county is gradually being prolonged and furnishes some very good wells. An unexpected strike at Tarkill has revived interest in the Venango portion of the Lower Country, and an old time excitement is now in progress within nine miles of Oil City.

ALLEGANY FIELD.

Farmer Dean's experiments with the Trenton limestone of Lima have induced a small exodus of Allegany operators to the Buckeye field. The era of low prices brings about the abandonment of many wells in the older sections, while Clarksville and Wirt furnish small areas of fair sized territory in which the drill finds still some work to do. Twenty-eight wells and three dry holes completed are Allegany's net results for June. Two of the dusters in no sense belong to the field, but are placed in the miscellaneous list as being the nearest in geographical range. One was sunk by the Middaugh Oil Company, on lot 1, north division of Scio township; another the property of the Murphy Oil and Gas Company, a company organized expressly for wildcat purposes, is located in Ashford township, in Cattaraugus county; and the third, near Yorkshire Centre, in the same county, about thirty miles south of Buffalo. On the last day of June there were 13 new rigs, 44 old rigs and 24 drilling wells in the Allegany field, a decrease of 12 rigs old and new and of 3 drilling wells, as compared with the report of May 31. The Allegany pipe line runs averaged 6981 barrels a day in June, 6535 barrels in May, 6895 barrels in April, 6545 barrels in March, 6361 barrels in February and 6235 barrels in January. The average daily runs for June one year ago were 7680 barrels.

THE BRADFORD FIELD.

Thirty-six wells were completed in the Bradford field in June, and only one was worthless as a producer of oil and that was located remote from the recognized territorial limits of the great northern oil basin. The new production is rated at 262 barrels. These figures give a decrease of 9 wells and 73 barrels production from the May list, and 16 wells and 120 barrels from the report for April. For the close of the month the account stands 15 new rigs, 36 old rigs and 29 drilling wells, against 17 new rigs, 36 old rigs and 40 drilling wells at the close of May. On the last day of January there were 34 new rigs and 67 wells drilling in this field, a total of 101; the total new work for June 30 is 44, showing a decline of over 50 per cent. in active operations within the past five months.

Bradford with its thirteen or fourteen thousand wells presents a phenomenal example of long lived territory, whose counterpart has never yet been discovered in the history of oildom. Its thick, brown sand rock is still responsive to the nitro-glycerine charge, and its wells pump by heads, in a steady unchanging way that has put to shame the prophets of ruin and decay. The size of the torpedo has steadily grown until the ordinary charge is never less than 350 pounds, and 500 pounds is not an uncommon measure. The manner in which Bradford has sustained her production is best shown by a comparison of the average daily pipe line runs of the first six months of 1884, '85 and '86:

	1884.	1885.	1886.
January	31,020	27,254	27,965
February	33,987	27,480	27,499
March	33,049	26,853	29,333
April	34,370	29,557	28,640
May	34,946	28,443	27,552
June	35,701	30,662	28,790

WARREN AND FOREST.

The Middle field completed 173 wells in June, including 19 dry holes; the new production is placed at 3090 barrels. This is an increase of 9 wells and a decrease of 1899 barrels, as compared with May. Kane and Grand Valley furnish 102 of the whole number of wells, and 2600 barrels of the new production. The record of active operations shows 72 new rigs, 21 old rigs and 145 drilling wells in the Middle field on the 30th of June as contrasted with 68 new rigs, 21 old rigs and 154 drilling wells on May 31.

Kinzua Village.—The third well of Morse & Collins, on the west side of the Allegheny, has been abandoned as an oil producer, and its more abundant product, natural gas, is to be piped across the river to supply the domestic wants of Kinzua Village. The Anchor Oil Company's No. 11, on the Morrison lands, located in good range for a fair producer, proved dry of oil when drilled through the sand. The Phillips' duster, on the Richardson lands, completed in April, contains a considerable quantity of oil, and the owners hope to make a small producer out of it. P. M. Smith & Co. have completed another good well on the railroad lands, between Kinzua Village and Wardwell, and a couple of new wells have been started in the immediate vicinity.

Clarendon and Tiona.—Drilling is proceeding in a moderate way throughout the broad area, stretching from the Allegheny river, at Wardwell, southward, to Farnsworth Siding, and from twenty-five to thirty strings of tools find employment. The extension south of lot 284 is of inferior calibre and hardly answers the expectations of the operators. It will be slowly drilled over, as work will not be pushed more rapidly than is absolutely necessary, until an advancing market makes it desirable. North of Stoneham, on lot 463, Fred Hue completed a light well, which checks the advance of the development northward to the river. It only had two feet of sand. A local celebrity of Warren, known as "Jakey, the Jew," has a well in the sand betwen Hue's well and the river, which, notwithstanding, a very poor location, is reported as having fifteen feet of sand and showing for a small producer. Captain E. H. Barnum, of Bradford, has finished a dry hole in the northwest

corner of lot 444, in his search after another oil field southwest of Warren. Magee & King have a 2-barrel well, on the Sechrist lands, just outside the western limits of Warren borough, and are earnestly seeking for more oil in that direction.

Cooper and Balltown.—The Cooper district is perfectly quiet and not a single drilling well disturbs the silence that is gradually settling down in this once important and rich producing section. Southwest of Balltown two dry holes rewarded the efforts of the operators busied upon the attenuated extension of this well-known district. James Welsh secured a producer on 5214 that started at 300 barrels, and is drilling for another at the month of Salmon run, on warrant 5269. N. F. Clark keeps one string of tools in motion on the northeast, where he has the field entirely to himself undisturbed by ambitious neighbors. The Balltown runs averaged 1104 barrels, and the Cooper 605 barrels a day in June.

Kane.—The rapid declining gauges reported from the Kane field do not correspond well with the pipe line runs, which show an increase of 1227 barrels a day over the May average. The field is thoroughly defined east, west and south, with approximate limits on the north, but within the lines, there is a good sized area yet to drill which, with the free use of nitro-glycerine will go far toward sustaining the average yield of the field close to 5000 barrels a day. The extreme length of the field will not probably exceed four miles, taking the Simpson & McMullen well, on 3775, as the southern, and lot 344, as the northern boundary. (See map of Kane, April Age, page 1296.) The width of the field can not exceed the distance from the Union, No. 1, a gasser, on lot 425, to the Porter duster in the southeast corner of lot 418, which is equal to about one and a half miles. But the western line will doubtless be found a considerable distance eastward of the 418 failure, making the field not much more than one mile in width. The average daily runs of the Kane field were 5702 barrels in June, 4475 in May, 3017 in April, 1252 in March and 435 in February. The total production of the field since last December, as measured by the pipe line runs, amounts to 456,441 barrels. Forty-nine productive wells were completed in June and three dry holes. The failures were Porter, Gilmor & Quick, southeast corner of lot 418, Kane Oil Company's No. 4, lot 11, of warrant 3775, which found plenty of gas, but no oil, and the National Transit Company's No. 8, on warrant 2695, in Sergeant township, which was drilled for gas, and found neither gas nor oil. The Landsrath duster, on lot 374, four and a half miles west of Kane, was deepened to the Kane sand without results. The new production of the Kane wells was 2168 barrels in June, as compared with 3828 barrels in May. On the last day of June there were 17 new rigs and 65 drilling wells in the Kane field, against 20 rigs and 69 drilling wells on the last of May.

The well of Rathbun & Co., near the southwest corner of lot 382, is rated in the report at 8 barrels. While it still wears an air of mystery enough is known to make certain the above estimate is not far wide of the mark. This well is close to the eastern borders of the field and determines the value of the east part of lot 381. Treat & Mallory are drilling a test well on lot 344, near the south line and 1300 feet east of the southwest corner. Several of the large firms will wind up drilling for a time, when present operations are completed.

Grand Valley.—Fifty wells were completed in the Grand Valley field during June, including eight dry holes. The new production is estimated at 432 barrels. There is no sign of an immediate cessation of drilling in this locality, as at Kane, and it bids fair to become the busiest section of Warren county the coming month. On the last day of June there were 31 rigs up and building and 33 wells drilling, an increase of 7 rigs and 2 wells drilling over the record at the close of May. A large area of territory on the south and east of the old development invites the drill, more by reason of its shallowness, than its great productive capacity. A gauge taken of the field, late in June, showed a production of 900 barrels from 114 producing wells. This represents a small average for a field that needs the encouragement of heavy doses of nitro-glycerine, combined with expensive pumping machinery from the very beginning. The territory about Newton Station, north of Grand Valley, and on the Spring Creek road to the west, has attracted a little attention, and the possibilities are considered good for an increased production in these two localities. Several dry holes were drilled between Grand Valley and the old Triumph field during the month recently closed. The latest estimate on the production of the field places it at 1400 barrels from 123 wells.

THE LOWER COUNTRY.

The Lower Country is responsible for over 60 per cent. of the total new production for June and 132 out of the 373 wells completed. The 132 wells include 33 dusters, and the new production is estimated at 5487 barrels. On the last day of the month the record stands 98 new rigs, 42 old rigs and 204 drilling wells, as compared with 79 new rigs, 33 old ones and 186 wells drilling on the 31st of May.

Venango.—On the extinction of Red Valley as an active centre of operations Tarkill steps to the front and swells the totals of old Venango to 56 wells completed and a new production of 2350 barrels. On June 30 there were in this county 42 new rigs, 9 old rigs and 43 drilling wells, a total of 94. As stated in the June Age the coming strike opened up the field for an extension to the northwest, which is an entirely unlooked for direction, for the usually well regulated pools of Venango county. The Canning well made 225 barrels for its best twenty-four hours' production, and on the 22d of June Taylor, Torrey & Murphy's No. 2, on the George Hill farm, about 500 feet to southwest, struck the sand and started at 15 barrels an hour. Since then a dozen or more wells have been brought in, in this section, ranging from 100 to 500 barrels each, and a pitch of excitement attained, long a stranger in one of the oldest oil producing counties in the world. Tarkill is credited with 28 wells in June, and a new production on the last day of the month of 2160 barrels. The work under way at the close of the month amounted to 18 rigs and 20 drilling wells. Taylor, Torrey & Murphy, to whose enterprise the new district owes its discovery, are running eight strings of tools. The northwestern limits of this surprising little pool are partially established by the failure of Canning 2, and the best portion of the territory appears to lie to the southeast. The field at present is nearly three miles in length and about half a mile wide, and its production since the first of July has been as high as 4000 barrels a day. The runs averaged 915 barrels a day in May and 1262 barrels a day in June. On the 13th instant there were thirty-six strings of tools at work.

Red Valley has dropped entirely out of public notice; on the last of June there were but two wells drilling in this recently active section. The common use of the torpedo has sustained the production, in a marked degree, as shown by the pipe line runs, which have averaged as follows: January 783 barrels, February 1017,

March 1206, April 1231, May 1260, and June 1181 barrels a day. The total runs for the field June 30th were 239,023 barrels.

Nickleville, about four miles northeast of Red Valley, is inviting the attention of Red Valley operators. The strike of Judd & Co., on the Stevens farm which, from 4 barrels a day, was raised to 15, by the explosion of a torpedo, has proved the incentive to farther drilling, and on June 30 a half dozen wells were in various stages of progress.

CLARION.—A few wells are drilling along the western side and at the northern end of the Cogley field, but the district is fairly out of the list which affords the aggregate of new operations. The resident operators of Clarion county have withdrawn from Cogley to drill about Shippenville and at other points on the edge of the old belt. Ten wells were completed about Shippenville and to the northeast on Paint Creek, and but one of them was a duster. The average daily pipe line runs from the Cogley district during July were 2936 barrels, a decrease of 322 barrels from the June figures. At the close of June there were 14 new rigs, 11 old ones and 12 wells drilling, a total of 37, against 35 at the end of May.

BUTLER AND ARMSTRONG.—The old fields of Butler and Armstrong keep up their quota of new operations through the out-of-the-way sections which still remain undrilled. At the southeastern end of the Thorn Creek field two wells were finished during June, each of which has a production ranging between 40 and 50 barrels. Both were located near wells which were drilled and abandoned at the close of the Thorn Creek oil excitement. One is the property of the Phillips Bros., on the Girard farm, and the other was completed by McBride & Co., on the Burton heirs' lands. The Thorn Oil Company's venture, on the north side of the creek, and southwest of the dry hole drilled by Christie Bros., is a failure. It disclosed the existence of twenty-five feet of sand, but is barren of oil. In drilling east of the old Painter well, at Reibold Station, Phillips Bros. have found two dry holes on the Piersol farm, and demonstrated that the prolific territory does not extend in that direction from the Uniontown Oil Company's well on the Critchlow farm. Fishel & Connors have completed a small well on the Dambaugh farm, northwest of Reibold Station, which will prove an incentive to further drilling in this direction. The Ort district, east of Millerstown, was the liveliest spot in the old district at the close of the month of June. The Troutman Oil Company's well, on the Murtland was producing 50 barrels per day, and the Dennison & Fleegler well, on the Miller, which added the new stretch of territory to the southward, had a daily yield of 175 barrels. The Simpson & Brady well, along the southern boundary line of the Boyle farm, 800 rods in advance of developments in a southerly direction, has been tubed and is pumping less than 5 barrels per day. Showalter Bros. have an important well drilling on the Church lot, about midway between the Simpson & Brady well, and the most southerly wells of the Ort pool. On the 24th of June the 70 wells in the Ort district were estimated to be producing 3000 barrels. The average daily pipe line runs from the district for that month were 2350 barrels. For the Butler and Armstrong field the monthly report shows 20 new rigs, 5 old ones and 48 wells drilling, a total of 73. The report of thirty days previous gave an aggregate of 54.

SHOUSTOWN.

The variety of results obtained in drilling for oil along the Ohio river, between Pittsburgh and Rochester, makes the business uncertain and alluring. During June 20 wells were finished having a new production on the last day of the mouth of 265 barrels and 12 of the number came in dry. Searching for crude near the new strike at Legionville proved unremunerative to interested parties. The Economites, No. 2, one location southwest of No. 1, and between the first well and the river, came in dry. The Galey Bros. also completed a dry hole on the other side of the river, on the McDowell farm, and in line with the Pioneer well. Asa Say & Co. have completed a well on a branch of Big Sewickly creek, which is reported to be a small producer of oil. H. C. Zeigler's dry hole, on the Jordan farm, and those drilled on the McCoy heirs' and Langfitt farms, cut off all chances of extending the streak from the producing wells of the Raccoon Oil Company in a northeasterly direction across the river. The Raccoon Oil Company's well, on the Stevenson heirs' farm, proved a surprise to the owners by producing 250 barrels in its best 24 hours, and averaging 203 barrels per day for the first eight days of July. It is located nearly 100 rods further north of the central line of the supposed belt than the other wells and gives the field an enlargement at this point. The No. 1, of the Raccoon Oil Company, on the A. P. Morrow farm, located a short distance northeast of the Wallace well, is showing for as good a well. Lovell & Rumsey's well, on the Alexander farm, near the dry hole on the McCoy, and northwest of the Wallace well, has filled up with oil since it was abandoned by the owners as a failure. Galey Bros. completed an important duster on the McElheny farm, on a supposed good line, and two miles in advance of the Wallace well.

WASHINGTON.

At this writing, July 15th, the attention of the oil trade is drawn to three wells in Washington county, and the reports which come from two of them are vague and unsatisfactory. The Cameron, No. 2, located midway between the Barre, No. 1 and No. 2, has been drilled through the Gantz sand and 50-foot without finding the rich lower pay streak. On the 10th of this month, as will be seen by the list below, it was producing 85 barrels while being drilled through the sand. The well was torpedoed on the 15th and reacted nicely after the shot, but did not flow again for twenty minutes. This well is a stunning surprise and from its location ought to have started at 1500 barrels a day or better. It demonstrates in a forcible manner the uncertainty of Washington territory. The outside wells at Cannonsburg and Taylorstown have been bear features during the past week. The Cannonsburg well is owned by the Manufacturers' Gas Company, and a number of stockholders in this concern are heavy and high rollers on the market. The well is reported good for 50 barrels. But this report lacks the proof of an open gauge after tank houses have been thrown open to the public.

According to the reports of the scouts who are stationed at Washington to watch all movements in the wild-cat field, the well at Taylorstown, located between six and seven miles west of Washington borough, has reached a depth of 2350 feet and has made two flows. At the present writing it is shut down, and the Vandergrifts and others interested are allowing all parties to draw their own conclusions from slender indicators concerning its probable producing capacity. At Wyland Station, on the B. & O. R. R., four miles northeast of the old Smith, or Dyer well, the Associated Producers completed a duster. It was drilled to a depth of 2599 feet without finding gas or oil. The rock formations are reported quite regular and the "50-foot" could be readily recognized at this point. The Lone Pine well, seven

2350

2599

miles southeast of Washington, adds another to the list of Washington failures. To shut off its salt water veins and caves three strings of casing were used. There were 700 feet of 7½ inch, 1300 feet of 5⅝ and 1500 feet of 4¼. They have passed the level which removes all chances of getting oil, but are still drilling below 2600 feet. They found gas at 1250 feet, and a second vein of the vapor in the 50-foot. The drill passed through the Gordon sand at a depth of 2224 feet. At this well fresh water was found 1500 feet below the surface. There were twelve wells finished in the Washington field in June and one-half of the number were dusters. On account of most of the wells being completed early in the month their yield on its last day was comparatively small.

The following is a list of all wells producing in the field July 10th, with their production for the 24 hours ending on that day:

Farm.	Operator.		Barrels.
Gordon,	P. L. & H. Co.,	No. 1	57
"	"	No. 2	5
"	"	No. 4	138
Hess,	"	No. 2	14
Gantz,	Citizens' Oil & Gas Co.,	No. 1	31
Weaver,	"	No. 3	7
Weirich,	Vandergrift,	No. 1	10
"	"	No. 2	45
Barre,	"	No. 1	400
"	"	No. 2	485
Hall,	"	No. 1	18
"	"	No. 2	412
Taylor,	Union Oil Co.,	No. 1	607
McGovern,	"	No. 1	31
Clark,	"	No. 1	33
Weirich,	Coast & Co.,	No. 1	15
Hayes,	"	No. 1	11
Lead Works Lot,	McKeever & Mulholland,	No. 1	13
"	Marsh & Caldwell,	No. 1	13
Smith,	Willets, Young, Craig & Co.,	No. 1	106
"	" "	No. 3	429
Cameron,	" "	No. 1	667
"	" "	No. 2 (in sand)	85
Shirls,	Shirls.	No. 1	70
Miller,	Guffey & Co.,	No. 1	32
Manifold,	Pew & Emerson,	No. 1	255
Gabby,	"	No. 1	5
Clark,	Thayer & Co.,	No. 1	65
"	"	No. 2	470
Munce,	Willets & Son,	No. 1	425
"	"	No. 2	500
"	"	No. 3	491
"	"	No. 4	135
"	"	No. 5	120
"	"	No. 7	360
Montgomery,	J. L. McKinney & Co. & Robbins,	No. 1	25
Taylor,	Galligan & Co.,	No. 1	30
Clark,	Hallam & Co.,	No. 1	2
Wiley,	Munhall & Co.,	No. 1	130

Date.	No. wells.	Production.
July 10	39	6,747
June 12	35	10,926
Difference	4	4,179

The average daily pipe line runs from the field in June were 8022 barrels. The highest average for one month made by the Thorn Creek field was 9493 barrels. There were 11 new rigs, 7 old ones and 80 wells drilling in the field on the 30th of June, a total of 98. The count at the close of May gave an aggregate of 92.

June Production Report.

Reports of the stocks on hand at 5861 Bradford wells showed an average decrease of two barrels to the well during June:

Time.	No. Wells.	Gross Stocks.	Average per well.
June 1, 1886	5,858	296,492	50.6
July 1, 1886	5,861	285,211	48 6
Difference	3	11,281	2.0

The number of wells in the Bradford field connected with the pipe lines on the first of July is estimated at 13,950. Estimating the entire Bradford region on the basis of two barrels decrease, the total decrease in stocks at wells during June was 27,900 barrels, a daily average of 930 barrels. Subtracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for June is as follows:

	Barrels.
Average Daily Pipe Line Runs	28,790
Average Daily Decrease of Stocks at Wells	930
Bradford's June Production, estimated	27,860
" May " "	27,148
Average Daily Increase	712

THE ALLEGANY FIELD.

Stocks from 900 wells in the Allegany field shows an average decrease of three and one-tenth barrels to the well, during June. With 4100 wells in the field on the first of July, the total decrease in stocks amounts to 12,710 barrels, a daily average decrease of 427 barrels for the month of June. Subtracting this decrease from the pipe line runs, 6981 barrels, the remainder 6554 represents Allegany's daily yield for June. The estimated production for May was 6535 barrels a day.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells June 1.	No. Wells July 1.	Average per well June 1.	Average per well July 1.
Clarendon and Tiona	215	218	25	22
Cherry Grove	22	22	43	43
Cooper District	99	125	41	36
Thorn Creek	35	35	148	121
Lower Country	90	90	60	55
Miscellaneous	161	163	97	103

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for June and May is as follows:

Field.	June. Barrels.	May. Barrels.
Bradford	27,860	27,148
Allegany	6,554	6,535
Outside Runs	40,040	34,515
Total	74,454	68,198

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, had a daily average production of 2275 barrels in June, 2104 barrels in May, 2401 barrels in April and 2186 barrels in March.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18.330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63,876	67,981
November	31,789	35,026	8,642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32,378	7,196	11,607	19,800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55,505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10,384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63 876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63,988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,585	27,051	6,651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	58,764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505
June	27,860	29,272	6,554	7,463	40,040	21,559	74,454	58,294

JUNE OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN JUNE, 1886.

Allegany Field.

Twp. Owner. Barrels.
Scio, 51, (E J Norton) Duke & Norton Oil Co No 65.... 6
Alma, 3, Mackin & Breckenridge No 14. 5
" 23, Vance & Horton.... 4
" 37, A A Almy No 2.... 4
" 37, Perrin & Young No 14.... 8
" 86, Brown & Thornton No 4.... 5
" 107, Shirley & Hochstetter No 9.... 5
Wirt, 34, (Drum) W R Cook & Co No 3.. 5
" —, Booth & Barton.... 6
" 48, (Howard) Nile Oil Co No 1.... 4
" 48, (Hicks) Chas Phillips No 6.... 4
" 48, (Church) Wirt Petroleum Co No 1.... 5
" 52, (Burdick) Wilson Bros & Ackerly No 15.... 10
" 61, (Marshall) Lime Kiln Club No 2.... 12
" 62, (Peterson) Barton, Hammond & O'Neill No 2.... 10
Bolivar, 6, Rogers & Co.... 4
" 23, Irwin & Morgan No 8.... 6
" 31, W B Irvin No 10.... 6
Clarksville, 5, (Wetherby) Steele & Werthman No 2.... 10
" 5, " Harris, Johnson & Co No 5.... 10
" 5, " " No 6.... 10
" 5, " " No 7.... 10
" 9, Whipple & Davis.... 3
" 10, (Swartwout) Angell Oil Co No 14.... 5
" 11, (Keller) " No 1.... 5
" 13, (Congdon) M M Congdon No 4.... 6
" 13, (Lane) Lane Oil Co No 3. 10
" 13, " " No 4. 10
North Div. Scio, Middaugh Oil Co.... dry
Ashford twp, Cattaraugus Co, Murphy Oil & Gas Co.... dry
Yorkshire Centre, Stearns & Co.... dry

Wells completed.... 31
Production.... 188
Dry.... 3

Bradford Field.

East and West Branches.

Dent, P C L & P Co No 66.... 8
" " No 67.... 10
Warrant 2258, Van Vleck & Mitchell No 87.... 10
J N Brown, N J Denning No 5.... 3
Havens, Phillips & Co No 1.... 4
Kingsburry, J Vantyne No 7.... 7
Tomes, Le Boeuff & Co No 2.... 4
Hatfield, Wesley Chambers No 2.... 5
Wagner, C K Book No 4.... 5
" W C Patterson & Co No 4.... 5
Foster, C H Foster No 2.... 5

Kendall Creek.

Moore, P C L & P Co No 14.... 10
Mehan, John P Zane No 11.... 8

Knapp's Creek.

Norton, F W Mitchell No 20.... 8
Baker, Baldwin & Co No 1.... 4
Erskine, G N Grow No 3.... 3

Foster Brook.

C B & H, Roberts & Co No 14.... 6
" Watson Oil Co No 43.... 6
" " No 44.... 6
" Hackett & Hutchinson No 2.... 6

Four-Mile.

Stevens, Book & Rhodes No 11.... 8

Indian Creek.

Shattuck, Bussell & Johnson No 2.... 8
" Whitney & Black No 1.... 8
" Wm M Brown No 8.... 8
Keyes, D J Keyes No 6.... 8
G & A, Gallagher Bros No 14.... 8
Bennett, Page & Van Campen No 1.... 6
Gale, Moore & Watson No 5.... 6

Cole Creek.

Bing'm, lot 538, C P Byron No 10.... 10
" 591, Ass Producers Co No 59. 30
" 497, Jack, Brawley & Co No 3 10
Bing'm, lot —, R B Moran.... 8
" 517, Rose & McLeod No 7.... 10
" —, Morgan & Turner.... 8

Miscellaneous.

Five-Mile, (Wm Chamberlain) Knox & Co No 1.... dry
Allegany, Stevens Bros.... 3

Wells completed.... 36
Production.... 262
Dry.... 1

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 3.... gas
Morrison, Anchor Oil Co No 11.... dry
Rollins, Morse & Collins.... 3
Rollins, Anchor Oil Co No 6 est.... 8

Warren, etc.

Wardwell, Benedict & Rockwell No 37.. 5
Hemlock, P M Smith & Co No 2.... 8
Segrist, (Spade Hollow) Magee & King. 2
Davis, Davis Bros.... 4
Sweating, Donahue & Co.... 3
North Warren, (Asylum Lands) Sanford & Jamieson No 5.... 6
Magee, J A Magee.... 3

Wells completed.... 11
Production.... 42
Dry.... 2

Clarendon.

34, Ferguson, Nutting & Gray No 4.... 5
35, Murphy & Hennessey No 6.... 5
35, J Smith & Son No 6.... 6
55, O W Beatty & Bro No 45.... 7
55, " No 46.... 6
107, W B Roberts & Son No 18.... 6
162, J A Dower No 8.... 5
463, Fred Hue No 1.... 2
463, J B McElwaine & Co No 9.... 5
463, Neill & Lammers No 6.... 5
464, D Riddlesperger No 4.... 8
464, Wm O'Neill & Co No 4.... 5
—, Paul Kratzer No 7.... 6
—, " No 8.... 5
464, Lockwood & Parsons No 17.... 5
531, S Short & Son No 2.... 6
531, " No 3.... 6
531, Keegan, Sage & Co No 2.... 6
558, Goss, Goal & Haskell No 8.... 6

Wells completed.... 19
Production.... 105
Dry.... 0

Tiona.

81, Fertig, McKinney & Co No 4.... 5
81, " No 5.... 6
103, (lot 15) " No 10.... 6
160, McCune Bros.... 3
160, Gilbert Oil Co No 35.... 3
160, O'Donnell & Hill No 8.... 5
160, " No 9.... 6
161, Helm & Mealey No 8.... 5
164, Wark, Moore & Co No 7.... 6
201, Wesley Chambers No 11.... 6
205, Smith, Bright & Co No 6.... 5
205, " No 7.... 4
205, Booth Bros No 15.... 6
205, Emerson & Farnsworth No 12.... 6
244, Horton, Crary & Co No 10.... 8
244, " No 11.... 8
244, " No 14.... 8
244, " No 15.... 8
244, " No 16.... 7
245, Shoelkopf, Horton & Co No 7.... 6
245, " No 8.... 6
284, Anchor Oil Co No 7.... 8
284, " No 8.... 8
284, " No 9.... 7
284, Pickett & Stone No 5.... 8
284, " No 6.... 8
324, " No 1.... 6
321, " No 2.... 6
321, Horton, Crary & Co No 1.... 6
320, Windsor & Roberts No 1.... 3

Wells completed.... 30
Production.... 183
Dry.... 0

Cooper District.

407, Cochran Bros No 13.... 5

Wells completed.... 1
Production.... 5

Balltown.

3195, (Crisman) N F Clark No 20.... 20
5214, Anchor Oil Co No 2.... 35
5214, " No 3.... dry
5215, May, Kelley & Grandin No 49.... dry
5215, " No 51.... 20
5214, James Welsh No 5.... 80

Wells completed.... 6
Production.... 155
Dry.... 2

Kane.

380, Boyer, Caldwell & Co No 1.... 25
380, " No 2.... 20
382, C H Rathbun & Co est.... 8
384, Shirley, Hochstetter & Co No 2.... 50
384, " No 6 est.. 50
384, F W Andrews & Co No 8 est.... 50
385, Kane Oil Co No 26.... 50
385, " No 27.... 60
385, " No 28.... 60
385, " No 29 est.... 80
385, " No 30 est.... 80
385, " No 31 est.... 80
385, Smith, Newell & Co No 1.... 50
385, " No 2.... 50
385, Howe, Lavens & Co No 4.... 50
385, " No 5.... 50
385, " No 7.... 50
418, Porter, Gilmor & Co.... dry
419, The Union Oil Co No 4.... 50
419, " No 7.... 40
420, Coast, Sons & Co No 8.... 20
420, " No 10.... 40
420, " No 12.... 50
420, " No 14.... 50
420, " No 16.... 50
421, Mallory & Co No 5.... 50
421, " No 6.... 50
421, " No 7.... 50
421, P T & W C Kennedy No 2.... 30
421, " No 3.... 30
421, " No 4.... 30
424, C Lincoln & Co No 2.... 25
424, " No 3.... 25
425, Union Oil Co No 24.... 40
426, Kane Oil Co " 13.... 50
426, " " 16.... 80
426, " " 36.... 50
3767, Craig & Cappeau No 15.... 60
3767, " No 16.... 60
3767, " No 20.... 60
3767, " No 22.... 40
3767, " No 27.... 30
3767, " No 41.... 40
3767, Ass'd Producers, Craig & Cappeau No 5.... 40
3767, " " No 6.... 40
3767, " " No 7.... 45
3767, Finnegan & Monroe No 4.... 15
3767, Roy & Archer No 3 est.... 30
3775, (lot 12) Kane Oil Co No 4.... gas
3775, P T & W C Kennedy No 10.... 15
3775, Andrews No 5.... 20
2695, (Sargent) National Transit Co No 8. dry

Wells completed.... 52
Production.... 2168
Dry.... 3

Grand Valley.

Campbell, L B Wood & Co No 10.... 15
Hunter, " No 2.... 10
Gibbs, " No 1.... 8
186, W B Benedict & Co No 6.... 10
196, " No 8.... 15
194, Parker & Nelson.... dry
Merritt, Miller & Crippens No 6.... 20
Peterson, " No 3.... 10
" " No 4.... 10
147, White, Sherman & Gelm.... dry
197, (Blakeslee) Tew Bros & Co No 2.... 10
197, " " No 3.... 10
Nason, D Emery & Boyer No 2.... 15
Brooklyn Oil Co, Black, Hopkins & Co.. dry
Zane, Fertig & Wood No 4.... 15
" " No 5.... 10
" " No 6.... 10
" " No 7.... 10
196, Groves & Sons No 3.... 10
196, " No 4.... 10
196, Jos Millison No 4.... 10
196, " No 5.... 10
196, (Goodwell) Bovee & Duck No 3.... 10
196, " " No 4.... 10
195, (Emerson) W W Hague No 3.... 6
234, " " 8
Carpenter, W J Jackson & Co No 4.... 10
150, Farrell, Nelson Farrell No 3.... 8
150, " " No 4.... 10
186, S W Stewart No 5.... 10
186, " No 6.... 15
186, " No 7.... 10
149, (D P Co) G P Kepler No 9.... 15
149, " " No 10.... 10
136, (Severance) " .... dry
197, Bell & Hazeltine No 2.... 10
197, " No 3.... 10
185 and 150, John J Carter No 1.... 10
185 and 150, " No 2.... 10
185 and 150, " No 3.... 10
200, Stettheimer & Shamburg.... 3
150, Brown & Wilson No 1.... 8
151, George Leckey No 1.... 10
151, " No 2.... 10
234, Mead & Beatty No 2.... dry
Reno Oil Co, Reno Oil Co No 4.... dry
193, T J Sherman.... 3
142, M Stewart & Co No 5.... 8

235, Windsor & McElwaine 3
100, Ames & Co ..... dry
Triumph twp, (Strong) Crippens & Co .. dry

Wells completed 50
Production 432
Dry 8

Miscellaneous.

Ludlow, People's Gas Co ..... gas
Pittsfield 170, Mandell, Ford & Co ..... dry
Garland, McCray & Co ..... dry
Forest 3687, Windsor & Roberts ..... dry

Wells completed 4
Production 0
Dry 4

Lower Country.

Venango and Other Sections.

Farm.	Operator.	Barrels.
Allison,	Fisher Oil Co No 11	5
Gates,	" No 4	6
Karns,	Oil City Fuel Supply Co	gas
"	"	gas
Diamond,	Loots & Co	10
"	Darr & Manning	6
Wilson,	(Oil Creek twp) Anchor Oil Co	dry
Heckathorn,	Phinney & Co	10
John Lerch,	Glass et al	dry
Mt Hope,	(Phil & Bos) Buchanan & Co	5
Kaufman,	A P Dale & Co No 8	4
Columbia,	Columbia Oil Co No 167	8
Jennie,	(Black Ash) Emery & Schuyler	dry
Pleasantville,	Emery, Skinner & Co No 3	6
Salem,	(Kinney) Kinney & Co	5
Ronseville,	J H McCandless	5
Nickleville,	(Stevens) Judd & Co	8

Tarkill.

J P Hill,	Taylor, Torrey & Murphy No 10	80
Geo Hill,	" No 1	5
"	" No 2	250
"	" No 3	350
"	" No 4	400
A Hill,	" No 4	40
"	" No 5	40
"	" No 6	40
W Hill,	" No 1	100
Benton,	Benton Oil Co No 5	30
"	" No 6	10
Alex Hill,	Duncan & Fisher No 8	35
"	" No 4	40
"	" No 5	40
"	Holt & Dorrington No 2	120
"	P H Judd & Co No 1	5
Lawley,	Cornwall & Hasson No 4	6
Huff,	Clark & Foster No 1	30
"	" No 2	5
Judge McCalmont,	P Canning & Co No 1	150
"	" No 2	dry
Kennedy,	Kale Bros & Gray	10
Houser,	A P Dale & Bro No 1	10
Dolan,	S P McCalmont	dry
Wm Hill,	Holt & Dorrington No 1	200
"	Phinney & Co No 1	150
"	Fisher & Hill No 1	60
Edmunds,	Playford & Boyd	4

Wells completed 28
Production 2160
Dry 2

Rockland or Red Valley.

Black heirs, Dale Bros No 2 20
J Jolly, Putnam & Heydrick 25
D Porter, Goodrich & Salisbury No 9 10
Hetzler, Rider & Co No 3 20
Johnson, Leckey & Co No 2 6
Batten, Bowen & Co No 2 ..... dry

Bullion.

Hovis, Hovis & Co 5

Vicinity Emlenton.

Six Points, (Aiken) Flynn Bros 5
Sandy Point, Viets, Daniels & Co 7
Titsworth, Kries & Klies 8
Sands, Frank Sands 6

Wells completed 56
Production 2350
Dry 8

Clarion.

John Herrman, Wolf & Bell No 14 15
Deitrich, Kale Bros No 3 40
Fern, White & Gifford 5
Strutman, Roes Bros 15
Cotherman, Weaver & Black No 3 5
Strutman, Pagett & Co No 1 15
W L Hess, W L Hess No 5 8
Exley, Zellers & Co 12
Wagner & Curl, Wagner & Hahn 5
Peter Moul, Smith, Corlett & Youkers 10
Shippenville, Black & Atwater 20
" Rowe & Co 10
Lockhart, White, Crawford & McDowell No 1 7
Lehigh, Pye & Co No 2 15
Kiser, Geo Kiser 12
Green, Phipps & Shaffer 3
Parsonage lot, Swartzfeger No 1 15
Finley, Irving & Co ..... dry

Wells completed 18
Production 207
Dry 1

Butler and Armstrong.

Titley, Titley Bros No 7 125
Dulity, Ireland & Hughes No 5 50
Jacob Frederick, Simpson & Brady 10
Miller, Dennison & Co No 5 125
" Dennison & Flegler No 1 150
Murtland, Thompson, Brown & Hovis 50
John Rogers, Branch Creek Oil Co 8
Duffey, McBride & Campbell No 2 12
O D McMillan, S D Bell & Co ..... dry
Perisol, Phillips Bros No 1 ..... dry
Myers, Simcox & Myers ..... dry
A J Frederick, Craig & Cappeau ..... gas
Pontius, Hunter & Cummings 50
Michael Black, Morrison & Co ..... dry
Weber, Rigney & Co 20
Boyle, (Eastern belt) Frank Boyle est 5
" Brady & Simpson est 10

St. Joe.

Mullegan, Mullegan & Co 10
Widow Witt, Witt, Coe & Co 5
Lane, P C L & P Co ..... dry

Thorn Creek.

Bartley, Phillips Bros No 12 25
Girard, " No 1 50
Mangell, Dr Bolard No 1 6
Benton, McBride & Campbell 40
Dan Wise, Thorn Oil Co No 8 15
Maharg, McKelvey & Co No 1 20

Wells completed 26
Production 786
Dry 6

Shoustown.

Ebenezer Duncan, J M Guffey & Co ..... dry
Legionville, Economites No 2 ..... dry
Fair Oaks, Big Sewickly Oil Co No 1 10
McDowell, Galey Bros & Co ..... dry
Jas Alexander, Raccoon Oil Co No 1 25
Thos Stevenson, " No 1 200
McCoy, " ..... dry
Wm Hood, " No 2 60
Widow Stone, Galey Bros 30
Jordan, H C Zeigler ..... dry
Widow Thompson, P M Shannon & Clark 20
McElheny, Galey Bros ..... dry
Alexander, Lovell & Co ..... dry

Georgetown.

Staley, Sherman & Co ..... dry
Dawson, Boyd & Dennison 10
Swaringer, Swaringer & Co ..... dry
Smith, Smith & Co 5
" Semple No 4 ..... dry
" " No 5 5
Winch, Tabor, Bly & Co ..... dry

Wells completed 20
Production 265
Dry 12

Washington.

Farley, P L & H Co No 2 ..... dry
Hough, " No 1 ..... dry
Morgan, " No 1 ..... gas
Weirich, Vandergrifts No 2 45
Hall, " No 2 504
Mrs Clark, Union Oil Co No 1 40
Smith, Young, Willets, Craig & Co No 3 600
Reid, (near Wyland Station) Associated Producers Co ..... dry
Munce, Willets & Son No 1 425
" " No 4 265
Wilson, Stettheimer Oil Co ..... dry
Byers, R O Meldrum & Sons ..... dry

Wells completed 12
Production 1879
Dry 6

DRILLING WELLS.

RIGS UP AND BUILDING JUNE 30, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
3,	Coyle & Simon (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old)	rig

New rigs 0
Old rigs 4
Drilling 0

Total 4

Alma.

3,	M J McMullan & Co No 5 (old)	rig
23,	Vance & Horton (old)	rig
24,	W F Jones (old)	rig
26,	Willetts & Elliott (old)	rig
28,	F N Whitcomb No 2 (old)	rig
37,	(Randall) E F Willetts No 3	drilling
37,	" " No 4	rig
38,	Koch Bros No 9 (old)	rig
51,	Sawyer & Co (old)	rig
81,	Shirley & Hochstetter No 5	drilling
86,	" No 12	drilling
86,	Brown & Thornton No 5	drilling
88,	Duke & Co (old)	rig
120,	McCalmont Oil Co No 10 (old)	rig
142,	Dean & Smith No 5 (old)	rig

New rigs 1
Old rigs 10
Drilling 4

Total 15

Wirt.

1,	(Riley Allen) Emp Gas & Fuel Co No 2 (old)	rig
47,	(Voorhees) Applebee & Mix No 2 (old)	rig
47,	(Johnson) Nile Oil Co	drilling
48,	(Church) Wirt Petroleum Co No 2	rig
55,	(R Mulkins) " No 5	drilling
52,	(Burdick) Wilson Bros & Ackerly No 14	drilling
55,	(R Mulkins) P M Shannon & Co No 2 (old)	rig
55,	(Orson Witter) " No 1 (old)	rig
55,	(S W Jordan) "	rig bldg
59,	(Carnahan) Dow & Barnsdall No 2	drilling
60,	(Alvah Jordan) J H Snow No 6 (old)	rig
61,	(Deyoe) National Tran Co No 75 (for gas)	drilling
61,	" " "	rig bldg
61,	" " "	rig bldg
61,	(I Jordan) Ackerly, Barton & Co (old)	rig
61,	(Isaiah Jordan) Lester, Jordan & Co No 6 (old)	rig
61,	" " No 7 (old)	rig
61,	(Goodell) C Phillips No 2	sand
61,	(Marshall) Limekiln Club No 3	rig
62,	(Peterson) " No 4	rig
62,	" Barton, Hammond & O'Neil No 3	drilling
62,	" " No 4	rig bldg

New rigs 7
Old rigs and shut down 8
Drilling 8

Total 23

Bolivar.

6,	Rogers & Co	drilling
12,	Wood & Co (old)	rig
23,	F C Streeter & Co No 12 (old)	rig
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig

New rigs 0
Old rigs 4
Drilling 1

Total 5

Genesee.

11,	(Little Genesee) Emp Gas & Fuel Co Limited (for gas) (old)	rig
14,	Merwin (old)	rig
22,	I Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
22,	" No 19 (old)	rig
23,	Coughlin (old)	rig
29,	William Cranston (old)	rig
38,	S E Young (old)	rig

New rigs 0
Old rigs 11
Drilling 0

Total 11

Clarksville.

3,	(Alvah Jordan) A B Cottrell & Co No 3	rig
3,	(M Jordan) M Jordan No 1	drilling
3,	(A Jordan) Angell Oil Co No 1	rig
10,	(Swartwout) " No 13	drilling
10,	" " No 16 (old)	rig
11,	(Keller) " No 2	drilling
5,	(Wetherby) Steele & Werthman No 3	drilling
5,	" Congdon & Warner No 4	rig
5,	" Harris, Johnson & Co No 8	drilling
5,	" " No 9	rig
5,	" " No 10	rig bldg

5, (Jordan) Cuba Gas Co (for gas) drilling
6, (Seever) Ackerly, Barton & Co No 9 (old) rig
13, (Nixon) " No 3 (old) rig
20 (Ernhout) " No 6 (old) rig
20, " " No 23 (old) rig
20, " " No 30 drilling
9, Heuston & Brecht No 4 (old) rig
9, Merritt (old) rig
10, Davidson & Co No 7 300
10, Whipple & Davis drilling
10, " rig
13, (Nixon) Barton & Hammond No 2 rig
28, (Butts) Love & Patterson No 15 drilling

New rigs 6
Old rigs 7
Drilling 11

Total 24

Bradford Field.

East and West Branches.

Cary, W H Duncan No 4 (old) rig
Dent, P C L & P Co No 68 drilling
Dent, Whitney & Wheeler No 45 drilling
" " No 46 rig
Bingham, lot 151-54, Union Oil Co No 21 drilling
Warrant 2268, R J Straight No 19 (old) rig
B O Co, Western Oil Co No 7 (fishing) sand
Mack, Columbia Oil Co (old) rig
" Fisher Oil Co No 19 (old) rig
King, Carman & Co No 1 sand
" W H Emery No 7 rig
Hatfield, Wesley Chambers No 3 rig
Wagner, C K Book No 5 drilling
" W C Patterson & Co No 5 drilling
Island, Pierce & Kearns No 1 drilling
Cockroft, Jas E Cochran No 3 drilling
Paton, McClure & Co (old) rig
Hinchey, McMurray Bros No 6 (old) rig
Clark, McCray Bros (old) rig
Willis, " drilling

Quintuple.

25, O H Strong (old) rig
44, J W Humphrey (old) rig
220, Clark, Stearns & Co No 13 drilling
260, E T Howes (old) rig

New rigs 3
Old rigs and shut down 10
Drilling 11

Total 24

Kendall Creek.

Fisher, Larrabee & Whedon No 9 (old) rig
Melvin, P C L & P Co No 87 drilling

New rigs 0
Old rigs 1
Drilling 1

Total 2

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) rig
Borden, T P Thompson (old) 3 rigs
" J Stettheimer No 5 drilling
Duke, J West No 7 (old) rig
" " No 8 (old) rig
" F T McEvoy No 8 drilling
Applebee, S M Jones & Co No 1 drilling
Keating, Forest Oil Co No 54 (old) rig bldg

New rigs 0
Old rigs 7
Drilling 3

Total 10

Foster Brook.

E T Co, Kervin & Co No 10 (old) rig
" E T Co No 41 rig
" " No 43 rig
" " No 51 drilling
" " No 52 (old) rig
C B & H, Juter & Yager (old) rig
" Clark, Cooper & Co No 9 (old) rig
" Roberts & Co No 15 rig
" Hackett & Hutchinson No 3 rig
" Burns & Monroe (old) rig
" Watson Oil Co No 45 rig
Willetts, Oliver & Skinner (fishing) sand

New rigs 4
Old rigs 6
Drilling 2

Total 12

Four Mile.

Van Campen, Coldren & Vance (old) rig
" Jas K Van Campen No 3 (old) rig
Dye, Manhattan Oil Co No 5 (old) rig

New rigs 0
Old rigs 3
Drilling 0

Total 3

Indian Creek.

North Branch, J D Downing & Co (old) 2 rigs
Hamlin, Miller & O'Dell No 4 (old) rig
" Forest Oil Co No 40 (old) rig
" " No 41 (old) rig bldg
Weston, J L McKinney & Co drilling
" Murphy, Hogan & Williams No 10 drilling
" " No 11 rig
" " No 12 rig
" Ernst, Perrin & Ramsey No 5 sand
" " No 6 rig
Shattuck, Bussell & Johnson No 3 drilling
" " No 4 rig
" " No 5 rig bldg
" Whitney & Black No 2 drilling
" Wm M Brown No 9 drilling
Barrett, Page & Van Campen No 2 drilling

New rigs 5
Old rigs 5
Drilling 7

Total 17

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) rig
" 2263, " No 7 (old) rig
Bingham, lot 498, Union Oil Co No 3 drilling
" lot 469, Bennett & Thompson No 11 (old) rig
" lot 477, Tucker & Rolfe No 3 (old) rig
" lot 497, Jack, Brawley & Co No 4 drilling
" lot 539, C P Byron No 11 rig
" lot 592, Ass'd Producers Co No 60 400

New rigs 1
Old rigs 4
Drilling 3

Total 8

Kinzua.

Warrant 3076, Union Oil Co No 64 (fishing) 1500
" 2243, Emery Oil Co No 49 400
Lot 129, P T & W C Kennedy No 8 rig

New rigs 1
Old rigs 0
Drilling 2

Total 3

Miscellaneous.

Sugar Run, Royal Oil Co rig bldg

New rigs 1
Old rigs 0
Drilling 0

Total 1

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 4 100
3705, (Wilkinson) T G Phillips 100
Richardson, J E Fogel & Co sand

Warren, Etc.

444, (Pleasant twp) E H Barnum sand
Grunder, " rig bldg
Willie, Beatty & Pickett (old) rig
Roy, James Roy (old) rig
Kerberger, Brown Bros 600
Sill, Magee & King rig
Quaker Hill, Cramer & Cogswell (fishing) 900
David Loucks, Unknown drilling

New rigs 2
Old rigs 2
Drilling 7

Total 11

Clarendon.

55, O W Beatty & Bro No 47 100
77, Wilson & Brenneman No 7 900
35, J Smith & Son No 7 rig
463, Fred Hue No 2 rig
460, Waid & Co No 2 sand
464, Howard Thompson No 2 rig
464, Columbia Oil Co No 22 drilling
496, Paul Kratzer No 9 rig
464, D Riddlesperger No 5 drilling
464, " rig
495, Conley Bros No 7 400
105, R I Shugert (old) rig
105, Hackett & Shirley No 5 600
107, W B Roberts & Son No 19 drilling
107, " No 20 rig
162, Goal Bros No 3 (old) rig
527, F H Rockwell & Co No 24 (old) rig
531, S Short & Son No 4 300
531, " No 5 200
531, " No 6 rig bldg
531, Keegan, Sage & Co No 3 600
531, " No 4 rig bldg
558, Goss, Goal & Haskell No 9 (old) rig
558, " No 10 (old) rig
558, Goal Bros drilling
Jakey, the Jew drilling

New rigs 8
Old rigs 5
Drilling 13

Total 26

Tiona.

83, Fertig, McKinney & Co No 7 drilling
83, " (old) 5 rigs
109, J R Kuhn & Co No 10 rig
160, Col D Gardner No 9 300
200, Bovec & Duck No 10 (old) rig
201, Wesley Chambers No 12 sand
201, " No 13 rig
202, Mandell Oil Co No 14 200
240, W W Winger No 5 (old) rig
242, Anchor Oil Co No 4 drilling
244, Horton, Crary & Co No 12 drilling
244, " No 13 rig
244, " No 17 drilling
244, " No 18 drilling
244, " No 19 drilling
244, " No 20 rig
244, " No 21 rig
245, Shoelkopf, Horton & Co No 9 200
281, (Ford) L Kraeer & Co No 7 rig
284, Anchor Oil Co No 10 drilling
284, " No 11 drilling
284, " No 12 rig
284, Hackett & Shirley No 5 700
321, Horton, Crary & Co No 2 200
286, Henderson, Spence & Richards (shut down) 1125
320, Windsor & Roberts No 2 rig
321, Pickett & Stone No 3 sand
321, " No 4 rig

New rigs 9
Old rigs 7
Drilling 16

Total 32

Cooper District.

407, Shank & Stewart No 9 (old) rig
407 " No 13 (old) rig

New rigs 0
Old rigs 2
Drilling 0

Total 2

Balltown.

3194, Porcupine Oil Co No 39 (old) rig
3195, (Crisman) N F Clark No 14 (old) rig
3195, " " No 21 rig bldg
3195, Stone, " No 8 200
5214, James Welsh No 6 drilling
5214, (Green) James Welsh No 7 rig
5214, Anchor Oil Co No 4 sand
5214, " No 5 drilling
5215, May, Kelley & Grandin drilling
5215, " drilling

New rigs 2
Old rigs 2
Drilling 6

Total 10

Kane.

344, Treat & Mallory No 1 100
344, " No 2 rig bldg
380, Boyer, Caldwell & Co No 3 1600
380, " No 4 1600
380, " No 5 600
380, " No 6 rig
380, " No 7 rig bldg
381, Boston Oil Co No 1 500
381, " No 2 300
381, " No 3 1200
381, " No 4 rig
384, Shirley, Hochstetter & Co No 3 1600
384, " No 4 1700
384, " No 5 800
384, " No 7 rig
384, " No 8 rig bldg
384, F W Andrews (S H & Co) No 4 sand
384, " No 5 1900
385, Kane Oil Co No 32 sand
385, " No 33 sand
385, " No 34 sand
385, " No 35 drilling
385, " No 36 drilling
385, Smith, Newell & Co No 3 2000
385, " No 4 800

385, Smith, Newell & Co No 5 ..... rig
385, " No 7 1200
385, " No 8 ..... sand
385, Howe, Lavens & Co No 6 ..... rig
385, " No 8 ..... sand
385, " No 9 1200
385, " No 10 1000
385, John Forest & Co No 1 1500
385, " No 2 1000
385, " No 3 300
385, " No 4 ..... rig
385, " No 5 ..... rig bldg
385, " No 6 ..... rig bldg
386, W P Weston & Co No 2 2000
386, " No 3 1800
386, Merrick & Rose (old) ..... rig
419, Union Oil Co No 8 1000
419, " No 9 600
419, " No 10 1000
419, " No 11 600
420, Coast & Sons No 11 ..... sand
420, " No 15 2200
420, " No 18 ..... sand
420, " No 22 2000
420, " No 23 2100
420, " No 24 1500
420, " No 25 1300
420, " No 26 1300
420, " No 27 1300
420, " No 28 ..... rig
420, " No 29 ..... rig
421, Mallory & Co (H S & Co) No 8 ..... sand
421, " " No 9 900
421, " " No 10 100
421, " " No 11 ..... rig
421, " " No 12 ..... rig bldg
421, Shirley, Hochstetter & Co No 2 (fishing) 2000
421, " " No 3 1700
421, " " No 4 1100
421, P T & W C Kennedy No 5 1800
421, " No 6 600
424, Fertig & Co No 2 (fishing) 1600
425, Union Oil Co No 25 ..... sand
425, " No 26 ..... sand
426, Kane Oil Co No 14 ..... drilling
426, " No 17 ..... drilling
426, " No 35 ..... drilling
426, " No 40 ..... drilling
426, " No 44 ..... drilling
3767, Cralg & Cappeau No 17 (fishing) 1200
3767, " No 19 2000
3767, " No 23 1900
3767, " No 24 ..... rig
3767, " No 31 ..... rig
3767, " No 32 900
3767, " No 34 500
3767, Ass Producers & Craig & Cappeau No 8 ..... sand
3767, (lot 12) John T Griffith No 6 ..... sand
3767, " 12, " No 8 1500
3775, P T & W C Kennedy No 7 1400
3775, Thompson & Denman (old) ..... rig

New rigs 17
Old rigs and shut down 2
Drilling 65

Total 84

Grand Valley.

Campbell, L B Wood & Co No 11 100
" " No 12 ..... rig bldg
Hunter, " No 3 ..... drilling
" " No 4 ..... rig
Gibbs, " No 2 ..... rig bldg
Lot 186, W W Benedict & Co No 7 ..... rig
" 196, " No 4 ..... drilling
" 196, " No 5 ..... rig
Merritt, Miller & Crippens No 7 ..... sand
" " No 8 ..... rig
Blakeslee, " No 3 ..... drilling
" " No 4 ..... rig
Lot 235 (Phil tract) Crippens & Phillips No 1 ..... sand
" 235, " " No 2 ..... rig
Lot 186, (Campbell) Holman & Hopkins No 5 (fishing). sand
Lot 186, " " No 6 ..... drilling
" 186, " " No 7 ..... rig
" 186, " " No 8 ..... rig bldg
" 197, " " No 1 ..... rig
Lot 197, (Blakeslee) Tew Bros & Co No 4 200
" 197, " " No 5 ..... rig
" 197, " " No 6 ..... rig bldg
Nason, Emery & Boyer No 3 600
" " No 4 ..... drilling
" " No 5 ..... rig bldg
Goodell, Fertig & Henne ..... drilling
Lot 185, (Zane) Fertig & Wood No 8 100
" 185, " " No 9 ..... rig
Lot 196, Groves & Sons No 5 200
" 196 " No 6 ..... rig
" 196, H P Boyd & Co No 4 ..... rig
" 196, " No 5 ..... rig
" 196, Jos Millison No 6 ..... sand
" 196, " No 7 ..... rig
" 196, Bovee & Duck No 5 100
Proper, W W Hague (old) ..... rig
Lot 195, (Emerson) W W Hague No 4 ..... rig
" 234, " " ..... rig bldg
Carpenter, W J Jackson & Co No 5 ..... rig
Emerson, Benson & Co No 3 ..... rig
Lot 150, Nelson Farrell No 5 ..... rig
Lot 186, S W Stewart No 8 ..... sand
" 186, " No 9 ..... rig
" 149, (D Pet Co) G P Kepler No 11 ..... drilling
" 149, " " No 12 ..... rig
" 197, Bell & Hazeltine No 4 ..... drilling
" 197, " No 5 ..... rig
" 185-150, John J Carter No 4 500
" 185-150, " No 5 ..... drilling
" 185-150, " No 6 ..... rig
" 235, Mead & Beatty No 3 ..... rig
" 236, Jos Millison ..... sand
Thomas, (Triumph twp) H Egolf ..... sand
Reno Oil Co, Reno Oil Co No 5 ..... rig
Lot 347, (Newton) Boiles & Roberts No 2 ..... drilling
" 142, Holman & Hopkins ..... drilling
" 146, Whaley & Zane ..... drilling
" 322, (Carr lands) Sherman & Wilson ..... drilling
" 53, (J Miller) Frank, Wood & Co ..... drilling
" 235, Tew & Thurston ..... sand
" 231, Gelm & Co ..... rig
New London, Helm & Hague ..... sand
Putnam, Wayne Oil Co No 1 200
Lot 238, (Thomas heirs) Windsor & Roberts ..... drilling
" 138, Daniels, Weible & Co ..... rig

New rigs 81
Old rigs 1
Drilling 33

Total 65

Miscellaneous.

Ludlow, Pennsylvania Gas Co ..... rig
5156, Central Petroleum Co ..... sand
3664, S B Hughes & Co ..... drilling
3671, M Feeley & Co ..... rig bldg
Millstone twp, Tarentum parties ..... drilling
Vowinkle, DuBois Oil Co ..... drilling
Elk county, Ridgway Oil Co ..... drilling
Youngsville, W Ford & Co ..... rig

New rigs 3
Old rigs 0
Drilling 5

Total 8

Lower Country.

Venango and Other Sections.

Sage Run, Beers & Son ..... drilling
Leehicton, Roess Bros ..... drilling
Sayers, Wolf & Kugler ..... drilling
Hogue, Oil City Fuel Supply Co No 2 100
" " No 3 ..... rig
Dale, " No 5 200
Davis, " No 1 200
Frampton, Frampton & Turner No 14 ..... rig
Diamond, Darr & Manning ..... rig
Pinoak, J B Smithman ..... rig
McBride, Thomas Smith (old) ..... rig
Kaufman, A P Dale No 9 100
Griffin, Puntell (old) ..... rig
Young, Octave Oil Co No 20 (old) ..... rig
Pleasantville, Emery, Skinner & Co No 4 ..... rig bldg
Osmer, Galbraith & Parker (old) ..... rig
Van Buren Furnace, Fry & Badger (old) ..... rig
Foster (Bully Hill) Galbraith & Smith ..... drilling
Mt Hope, Buchanan & Co No 2 ..... rig
" " No 3 ..... rig
Rouseville, Smith ..... rig bldg
Kaufman, Judd & Geiser ..... rig
Centreville, Hess & Co ..... rig bldg
East Sandy, Capt Ormston ..... drilling
Reno, Munross & Co ..... drilling
A Moore, Gibson & Co ..... rig
Benninghoff, L Benningboff ..... drilling
Petroleum Centre, Rhodes Bros ..... drilling
Pioneer, H R Davis ..... rig
Columbia Farm, Beers & Co ..... rig

Tarkill.

Webb, Taylor, Torrey & Murphy No 17 800
A Hill, " No 7 600
" " No 8 100
" " No 9 ..... rig
" " No 10 ..... rig bldg
Geo Hill, " No 4 ..... sand
" " No 5 500
" " No 6 ..... rig
Wm Hill, " No 2 ..... drilling
" " No 3 ..... drilling
W H Hill, " No 4 ..... rig
" " ..... drilling
Benton, Benton Oil Co No 7 ..... drilling
" " No 8 ..... rig
Alex Hill, Duncan & Fisher No 6 400
" " No 7 ..... rig
" Holt & Dorrington No 3 ..... rig
" P H Judd & Co No 2 ..... rig
Huff, Clark & Foster No 3 ..... rig
" Duncan & Co ..... drilling
" Kelley & Fisher ..... rig
Wm Hill, Fisher & Hill No 2 ..... sand
" " No 3 400
Wm Hill, Fisher & Hill No 4 ..... rig
" Holt & Dorrington No 3 ..... drilling
" " No 4 ..... drilling
" " No 5 ..... rig
" Boyd & Kane No 1 ..... sand
" Hassan & Cornwall No 1 ..... sand
" Phinney & Bishop ..... rig
Sam Hill, Shafer & Marks No 1 600
" Deitrich & Co No 1 800
" " No 2 ..... rig
" Levi Cohen & Co No 1 ..... rig
Houser, A P Dale & Co No 2 ..... rig
Dolan, S P McCalmont (old) ..... rig
Judge McCalmont, Canning & Goettell No 3 ..... drilling
" " No 4 ..... rig
" " No 5 ..... rig bldg

Rockland or Red Valley.

J Jolly, Dale Bros ..... drilling
" Heydrick & Putnam No 2 ..... rig
Hetzler, Hite & Co ..... drilling
" Morgan & Co ..... rig
Grant & Sheasley, W H H Piper (old) ..... rig
Batten, Bowen & Co ..... rig bldg

Bullion.

Crawford, Hoffman & Co 500
" McFadden & Co 200
Shorts, Giles & Smyth 600

Nickleville.

Stevens, P H Judd & Co No 2 ..... rig
Persing, " No 1 ..... rig
Bly, W H H Piper No 1 300
J Davis, James Downing 300
Widow Barns, Koch Bros ..... rig
Dan Levere, John H Lee ..... rig

Vicinity Emlenton.

D Russell, Baum & Co (old) ..... rig
Porterfield, A A Hopkins (old) ..... rig
Dr Crawford, Wm Weaver No 6 ..... rig
W P Grant, J V Ritts ..... rig
Jamieson, Barnes & Co ..... drilling
Leizel tract, Fink & Johnson ..... drilling
Dreibelbeis, Morgan & Mull ..... rig
Piper, (Richie Run) King Bros ..... rig bldg
Jolly, (Scrubgrass twp) Cooper & Leewalter ..... drilling
Kohlmeyer, (Byron Centre) Bennett & Sons ..... rig bldg

New rigs 42
Old rigs 9
Drilling 43

Total 94

Clarion.

Rickenbrode, John J Carter No 9 ..... sand
" " No 10 (old) ..... rig
Berlin, Patterson, Leedom & Hayes No 14 (old) ..... rig
" " No 15 (old) ..... rig
Fisher, Staley, McDonell & Deitrich (old) ..... rig
Beals, Beals Hunter & Co No 10 ..... sand
E Slicker, Painter & Co (old) ..... rig
John Henel, Koch Oil Co No 8 (old) ..... rig
H J Smith, Shaffer & Sheasley (old) ..... rig
Lloyd, Ritts (old) ..... rig
" Dr Metzger (old) ..... rig
Hess, L Oil Co ..... rig bldg
John Moore, John Deitrich ..... rig bldg
Stumpner, Deitrich & Co 600
Nickleville, J D Downing & Co 300
Weaver, Kugler & Zellers ..... rig
Shaffer, McCollum & Co (fishing) ..... sand
Hartman, Jacob Hahn (old) ..... rig
Wagner & Curl, Ritts (old) ..... rig
Starr, Starr & Co (fishing) 800
Dougherty, DuBois Oil Co 200
Peter Moul, Smith, Youkers & Corlett No 2 ..... rig bldg
Black, Robert Nicholson 600
Lockhart, White, Crawford & McDowell No 2 ..... rig
Booth, Moyer & Co ..... drilling
Smith, Oak Shade Oil Co No 2 ..... rig
Heasley, Heasley & Co ..... rig
Baker, Deer Creek Oil Co ..... drilling
Gloss, Gloss ..... rig bldg
Henry Kiser, Henry Kiser ..... rig bldg
Sloan, Brothers & Co ..... rig bldg
Widow Black, Seybert ..... rig
Allaman, John Allaman & Co ..... rig
Metzger, Youkers, Smith & Corlett 100
Call, P F Kribbs 300
Hosterman, Wilson & Hosterman ..... rig bldg
Brown, J V Ritts ..... rig

New rigs 14
Old rigs 11
Wells drilling 12

Total 37

Butler and Armstrong.

Titley, Titley & Bros No 8 800
Black, Ross, Reynolds & Co (old) ..... rig
Dulity, Ireland & Hughes No 6 500
" " No 7 300

" McCafferty & Randall No 2 500
" Greenlee & Russell No 1 500
" Greenlee & Sample No 3 800
" " No 4 550
Miller, Dennison & Fleegler (Summit wells) No 2 700
" " " No 3 250
" " " No 4 200
" " " No 5 100
" " " No 6 rig bldg
" " " No 7 rig bldg
S Miller, W G Crawford & Co (old) rig
Murtland, Thompson, Brown & Hovis No 2 300
Glenn, W P Turner & Co No 2 sand
" " No 3 rig
Frederick, Jacob Frederick Oil Co No 3 200
" " No 4 rig bldg
" J C Geisford & Co No 1 rig
Duffey, McBride & Campbell No 3 rig
Black, Father Quilter 1200
" Campbell & Murphy No 2 1000
Hickey, Boyd & Semple 700
Downey, Downey & McTamany 1300
Eminger, Boyd & Semple No 2 (old) rig
Glenn, G F Fetzer & Co No 6 1000
" " No 7 100
" Hite & Larkin No 1 800
Brownfield, McElroy, Vensel & Co No 1 rig
Murtland, Troutman Oil Co No 2 300
Brownfield, Richard Jennings rig bldg
Church lot, Showalter Bros & Hartman 600
Barnhart, Reep & Sutton No 2 300
" " No 3 drilling
" " No 4 rig
David Shakeley, Bruce, McCormick & Co rig bldg
Jenny Boyle, Showalter Bros & Hartman 200
Barnhart, Dale, Larkin & Co 400
Black heirs, Turner & Co drilling
Walker, (Jefferson twp) Conkle & Co sand
'Squire Reatt, Hunter & Cummings (old) rig
Piersol, Phillips Bros No 2 1350
Wright heirs, Phillips Bros No 1 1600
S H Critchlow, " 100
Jefferson Centre, Extension Oil Co No 2 rig
Wallace, White & Co 800
Fred Dambaugh, Connors, Fishel & Co 1300
Galesbach, Leidecker & Co rig
Critchlow, Uniontown Oil Co No 2 400
Railroad lot, Boyd & Semple 300
Burr, Schmick rig
Markle, Lappe & Co 750
Jenkins, Jenkins & Co (shut down) 1000
Leithold, Hunter & Cummings No 3 900
Black, Kittanning Oil Co rig
Saxon Station, Shenango Natural Gas Co 700

St. Joe.

Clouse, Phillips Bros No 5 1300
Widow Witt, McGuire & Co drilling
Angert, P C L & P Co rig
Slater, McGuire & Slater 800

Martinsburg.

Abner Kelley, McKissock & Co 200

Thorn Creek.

Mangell, Dr Bolard & Co No 2 (old) rig
Chas Morrison, Clark & McKinney No 1 1600
Welch, Thorn Oil Co No 9 1600
Maharg, Shetter, McKelvey & Co No 2 1450
Girard, " No 2 500
Hayes lot, Starr, Gibson & Gahahan rig bldg
Kersting, McClung & Co rig
Bulford, McBride & Campbell rig bldg
" Greenlee & Co rig bldg
Bulford, Sam Armstrong rig bldg

New rigs 20
Old rigs 5
Drilling 48
Total 73

Washington.

Gordon, P L & H Co No 5 600
Hess, " No 1 (fishing) 2100
" " No 3 200
" " No 4 100
Taylor, " No 1 (shutdown) 2250
Weaver, Citizens' Oil & Gas Co No 2 740
Mrs Curry, Vandergrifts No 1 2100
I Wilson, " (old) rig
Johnson, " (old) rig
Hall, " No 3 rig
" " No 4 rig bldg
Taylorstown, Vandergrifts 2100
Barre, " No 3 1500
" " No 4 1500
" " No 5 1400
" " No 6 900
Mary Miller, Reed & Co 600
Morgan, Union Oil Co No 1 800
Wm Davis, " No 1 1000
" " No 2 500
Taylor, Union Oil Co No 2 150
" " No 3 1600
" " No 4 1000
Wylie, A P Co and others No 1 (fishing) 1650
" " No 2 100
" " No 3 rig
Linn, Coast, Sons & Co No 1 1650
" " No 2 700
Clark, Thayer Oil Co No 3 1800
" " No 4 500
" " No 5 600
Brownlee, Hallam & Co (old) rig
Smith, Willets, Young, Craig & Co No 2 (gas) 2130
" " No 4 700
Cameron, " No 2 sand
" " No 3 fish'g 1500
" " No 4 700
" " No 5 700
" " No 6 800
" " No 7 500
Lone Pine, Caldwell & Co 2400
Zelt, A P Co & Union Oil Co No 1 1850
" " No 2 (old) rig
Baker's Station, Dyer & Roberts 400
Munce Heirs, Willetts & Son No 2 sand
" " No 7 1950
" " No 8 500
" " No 9 700
" " No 10 500
McGowan, E M Hukill & Co 1750
McDonough, I Willets & Co rig
Manifold, Pew & Emerson No 2 (old) rig
Kountz, Pew & Emerson No 1 (shut down) 1600
" " No 2 (shut down) 2440
Miller, Pew & Emerson (dry in 50-foot) sand
Barre, " (old) rig
J Munce, " (shut down) 600
Andrews, Wilson, Brenneman & Weaver (fishing) 1550
Parsill, Fisher Oil Co 1150
Wade, B B Campbell & Co 1300
Lizzie Magahaey, Roth, Peffer & Dyer 1480
Hall, W S Guffey & Co 1400
W J Munce, John McKeown No 1 300
" " No 2 1700
" " No 3 1400
" " No 4 1400
" " No 5 800
" " No 6 700
" " No 7 300
" " No 8 100
Coal Center, B C Jackman farm, Hornbake drilling
Montgomery, McKinney & Co & Robbins No 2 sand
Shirls, Harrison Shirls No 2 1400
" " No 3 845
J B Miller, United Gas Fuel Co 1100
Dr Stewart, Craig & Co 1500
Shrontz, Nail City Oil Co 1450
Taylor, Galligan & Young 2100
Hallam lot, Garrett & Co rig
Judge Hart, McKeever & Co 800
Price, Crocker & Co rig
Peters Creek, (Anderson Station) Knox & Co 1500
Wolf, Craig & Co rig
Fergus, " 700
McBride, Manufacturers' Gas Co 1600
Maloy, Ten-Mile Oil Co 800
Fair Grounds, Wheeling Oil Co 900
Martin, Central Oil Co No 1 600
" " No 2 400
Wolf, Robbins & Co (old) rig
Lane, Howard & Co rig bldg
Forest lot, Craig & Co 400
Wright, Fretts rig
John Murdock, Millers Oil Co rig
Johnson lot, Cotton & Co 600
Martin, Garrett & Co rig bldg
Boyce Station, (Fife farm) Philadelphia Co 1000
Wylie, Munhall & Co 300

New rigs 11
Old rigs 7
Drilling 80
Total 98

Shoustown, Etc.

Neville Island, Geo H Dimick & Co (fishing) 300
Mt Nebo, Union Oil Co drilling
Thos Pinkerton, J S McKelvy (old) rig
Economy, Barton, Ackerly & Co 800
Breittenstein, McGrew Bros 1200
Big Sewickley creek, Asa Say & Co 2 rgs bldg
Glenfield Station, Kilbuck Oil Co 1100
Alaver, Shannopin Oil Co drilling
Jas Alexander, Raccoon Oil Co No 2 rig bldg
" " No 3 rig
Isaac Harper, " No 2 (old) rig
Robert McCartney, " 800
Charles Eachel, " No 2 rig
" " No 3 300
A P Morrow, " No 1 900
" " No 2 200
John Morrow, " No 3 rig bldg
" " No 4 rig bldg
Kennedy, " No 1 rig
Marks, " rig bldg
Jordan, Watson & Co (old) rig
" Watson & Co (old) rig
Robert Boyce, J A Tomlinson 500
Gilmore, Philadelphia Co No 2 1500
Lanfitt, Dilworth & Co 1150
Wm McElheny, Lovell & Co (abandoned) 500
Dan Bruce, Munhall & Co (fishing) 1300
Stone, McFarland rig
Unknown, Davis & Lyle rig
Downing, Allegheny Oil Co No 5 100
Cookson, " No 4 100
Fair Oaks, Economites 300

Georgetown, Etc.

Fishel Connors & Boyd 200
Fordyce, E M Hukill & Co No 1 (shut down) 1300
Gregg, E M Hukill & Co No 1 (fishing) 2000
Girard, E M Hukill & Co No 1 Dunkard (shut down) sand
Girard, E M Hukill & Co No 2 (shut down) sand
Hathaway, E M Hukill & Co No 1 (shut down) 1000
Mt. Morris, E M Hukill & Co drilling
Longanecker, " (old) rig
Farmington, W Va, E M Hukill & Co drilling

New rigs 11
Old rigs and shut down 10
Drilling 21
Total 42

SUPERINTENDENT RIDDLE, of the Pittsburgh Lines, was in Bradford early in July and purchased two iron tanks which he will move to the Washington field and rebuild for storage purposes. One has a capacity of 10,000 and the other 25,000 barrels. Iron tankage is now sold in Bradford as low as five cents per barrel. While the Washington field lasts the Pittsburgh refiners are likely to keep their "little pails" filled with oil. They tow oil up the Ohio river in bulk in barges from the Shoustown field.

OPPERMAN'S Middle Field pocket maps for sale at AGE office.

H. J. SUHR, S. Justus and L. Walt have purchased ten acres of the old Clapp farm, along Oil creek, above Oil City, and will build a refinery. Suhr and Justus are already interested in the barrel works near the Continental refinery, and also in close proximity to their refinery site.

THE Pennsylvania Railroad Company is making arrangements to conduct a series of experiments with the view of the use of natural gas as fuel for its locomotives. A large gas tank has been erected in the Pittsburgh yards, and the Philadelphia Company will supply the gas. The gas will be compressed under heavy pressure into special tanks attached to the locomotives.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO JUNE 30, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5,180
December	98,582	17,342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,353	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,546	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87 193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107 514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67 883	151,913	4,900
September	19,590	64,648	63,453	147,691	4,923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25,469	62,262	2,224
March	11,558	28,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71.459	2,305
June	10,324	18,154	33,126	61,604	2,053
Tot'l June 30 '86	3,561,839	2,580,704	2 130,784	8,273,227	5,436

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district up to June 30, 1886. Cherry Grove has produced 3,561,839 barrels, Cooper 2,580,704, and Balltown 2,130,784 barrels. The daily average runs from the three fields during June were 2053 barrels, a decrease of 252 barrels from the May figures.

The daily average runs from the Cooper and Henry's Mills section for June were 605 barrels, May 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, and for January 623 barrels.

The Balltown field had a daily average of 1104 barrels in June, 1376 barrels in May, 832 barrels in April, 1059 barrels in March, 1056 barrels in February, and 1063 barrels in January. Cherry Grove averaged 344 barrels in June, 338 barrels in May, 347 barrels in April, 353 barrels in March, 305 barrels in February, 306 barrels in January, 442 barrels in December, 303 barrels in November and 428 barrels during October.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to June 30, 1886, inclusive, has been 8,273,227 barrels, a total daily average of 5436 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

Month.	Baldridge Runs.	Daily Average			
April	25,325	844			
May	32,885	1,061			
June	29,070	969			
July	27,545	889			
August	26,134	843			
September	79,324	2,644			
October	187,068	6,034			
November	284,806	9,493			
December	270.644	8,730			
January, 1885	192,180	6,199			
February	205,774	7,349			
March	224,398	7,239	Cogley.	Daily	
April	280,005	9,333	Runs.	Average.	
May	232,138	7,488	3,927	127	
June	105,774	5,905	18,266	609	
July	119,531	3,856	37,848	1,220	
August	70,318	2,268	65,570	2,115	
September	60,637	2,021	97,325	3,244	
October	58,834	1,898	153,110	4,939	
November	44,081	1,469	162,476	5,416	
December	44,011	1,420	162,479	5,241	
January, 1886	39,933	1,288	138,549	4,469	
February	34,094	1,218	111,144	3,970	
March	42,430	1,369	119,270	3,847	
April	38,983	1,299	108.541	3,618	
May	37,752	1,218	100,994	3,258	
June	40,167	1,339	88,082	2,936	

For the fourteen months ending with June 30, the Cogley oil field has produced 1,367,581 barrels of oil, a daily average of 3327 barrels. The daily average for 381 days ending May 31, was 3358 barrels. Previous to May 15, 1885, Cogley oil was included with the general runs of the old Clarion field. The daily average for June is 322 barrels less than for May, while May is 360 barrels a day less than April, and the April average 229 barrels less than that of March. March declined 123 barrels a day from the February average, while February fell off 499 barrels from January, and January showed a decrease of 772 barrels a day when compared with December. The Thorn Creek and Baldridge runs averaged 1339 barrels a day in June, 1218 barrels in May, 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January, 1420 barrels in December, 1469 barrels in November, 1898 barrels in October and 2021 barrels in September. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 500 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 30th of June had produced 245,024 barrels; a daily average for 273 days of 897 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April, 915 barrels a day in May, and 1262 barrels a day in June.

The runs by the Southwest Pennsylvania and Pittsburgh Pipe Lines from the Washington field averaged 5397 barrels a day in May and 8022 barrels in June. The runs from the Shoustown or Shannopin field were 231 barrels a day in May, and 272 barrels a day in June.

MORE than fifty natural gas companies have been organized in Indiana, for the purpose of sinking wells in different parts of the State. Gas was struck near Lexington, on June 7, at a depth of 167 feet. A flame twenty-seven feet high is said to be burning at this well.

PETROLEUM PRODUCTS.

THE MARKET FOR REFINED AND LUBRICATING OILS AND REFINERS' SUPPLIES.

As soon as the necessary arrangements can be made THE PETROLEUM AGE will add a new department to its already comprehensive range of features. It has always covered the oil fields more thoroughly than any periodical published, and to this will be added a careful review each month of everything pertaining to the business of refining and the manufacture of the products of petroleum. In the near future we shall trace the business each month from the building of a rig in the wilds of the producing region to the burning of a wax candle made from the products of petroleum.

Below is a review of the New York market for mineral, animal and fish oils, etc., prepared by our seaboard representative:

[Reported expressly for THE PETROLEUM AGE.]

THE NEW YORK OIL MARKET.

The month of June developed few features of special interest in the lines covered by this report, and none but what were expected. The volume of business was about a fair average for the month, although there have been an unusual number of chronic croakers who complained of dull trade. This has become quite a feature in our market, and should mislead no one. The fact is that during the earlier months of the year trade was unusually dull, and as summer came without the usual spring activity, the grumblsrs have continued to find fault with the state of trade, notwithstanding that the outlet for oils generally has been fully up to the average for June. Not only has business been seasonably good, but values on several oils have developed marked improvement which has proved welcome to dealers as prices had been abnormally low. This improvement has not extended to mineral oils, which are even more depressed than before.

ANIMAL AND FISH OILS.

Cod.—The bulk of the supplies have been pretty well concentrated and prices were kept quite steady until about the middle of the month when some of the smaller holders entered the market, and by forcing their supplies caused a drop of fully 2c, sales of small parcels of domestic crude being made at 32@36c, as to quality, and tanked dropped to 38@40c. Newfoundland did not suffer to the same extent, but has remained steady at 40 @42c. These "outside" parcels have about all been placed, and as other oils are doing better the market has gained strength, and although there has been no advance these prices are rock bottom, while some of the principal holders do not offer large lots at above figures.

Elaine.—Trade throughout the month of June has been quiet and values remained steady at 37@39c, but since the opening of the present month there has developed a better demand, and values on other oils showing an improvement Elaine has advanced in sympathy, the present quotations being 38@40c, at which the market is moderately firm. The offerings are large, and but for this fact a further advance would doubtless have taken place ere this.

Lard.—The fluctuations in values during June were of minor importance, and only since the opening of the present month has the situation become of special interest. The advance in lard caused pressers to make a corresponding advance on the oil and the market for prime city is to-day 52@53c, as to presser, though a large order could doubtless be placed at 51c. Western is held at about the same figure, 52c being the average quotation. At these figures the business has dwindled to jobbing proportions. Of course future values will depend upon the course of the market for lard, and as the tendency in that article appears to favor the holder, no immediate reaction need be looked for. The lower grades have advanced to correspond with the higher figures for prime, and we quote No. 1 extra, 48@50c; No. 1, 45@46c, and No. 2, 42@44c.

Menhaden.—The market during the entire month of June was in an unsettled condition and values were somewhat uncertain, with a difference of fully 2c between the views of buyers and sellers. The fishing, which opened better than usual, fell off considerable as the month advanced, and manufacturers consequently became firmer in their views, refusing bids that would have been entertained earlier. The situation, however, cannot be regarded as favorable to holders. At the opening of the season there was in possession of manufacturers over 20,000 barrels of last season's oil, and this has not been materially reduced. Should, therefore, the catch this season prove a light one there will be abundance of oil to supply probable requirements. The sales during June footed up about 3000 barrels, about a third of which was taken for export at 21@21½c, and the sales for home use at 21@22c. Holders now ask 22@23c, while dealers refuse to pay above 21c, consequently sales are effected only as dealers find they must replenish their stocks. The demand for bleached and pressed is only moderate and prices are about steady at 27@28c for brown pressed; 28@29c for light pressed; 28½@29c for bleached spring, and 29½@30c for bleached winter.

Saponified.—Owing to the continuance of lack of activity and the large offerings, this oil has not partaken of the improvement noticeable in competing oils, and the market has not changed from 40@43c, which has been the prevailing price for some time. An improved demand, however, would send prices up and holders appear confident that they will be able to secure better figures later on.

Sperm.—Both here and at New Bedford the market has been devoid of features of interest. The sales of crude in New Bedford have been small and values have remained about steady at 75c, with 73c bid. The stock has been accumulating and is now about 22,000 barrels, and an advance is, therefore, out of the question. Refined is barely steady and in light request. We quote natural winter, 86@88c; bleached winter, 91@93c; natural spring, 81@82c, and bleached spring, 86@87c. These prices are somewhat lower than were current in June, but there has been a gradual weakening and this reduction is partly in anticipation of a drop in crude, and partly due to the lack of demand.

Whale.—Early in the month under review a good demand set in for crude, both for export and home use, the low figures then prevailing attracting buyers from all markets. During the past month about 15,000 barrels have been disposed of at New Bedford, fully two-thirds of which was shipped abroad, one vessel alone, the ship Syren, taking 7300 barrels to Havre. The abnormally low prices that had prevailed attracted speculative purchasers, and it is believed that the bulk of the shipments abroad have gone into speculators' hands. These sales were made at varying prices up to 33c for export, and 35c for home use, but now holders of Arctic require 40c, and point to the diminished stock for a justification of their views. There is considerable South Sea oil yet to arrive, but as this is not wanted for export it is relatively cheap. The stock of crude of all grades

now held at New Bedford is about 13,000 barrels. Refined has been in light request, but is very firm at 39@40c for natural winter; 42@43c for bleached winter, and 44@45c for extra bleached northern.

MINERAL OILS.

Black.—Summer is about the only quality at present called for, although there have been some fair sales of cold test, a couple of 30° c. t. being reported sold at 7½c. This is below the market values, dealers quoting 8@8½c, though the bulk of the business is done at 8c. For summer 6c appears to be the best figure obtainable, although there was a strong effort early in the month to force the price to 6½c. Just before the opening of the present month a lot of 150 barrels was sent here and went begging for a customer, but was at length disposed of at a price not made public, but believen to be about 5c.

Cylinder.—Light filtered cylinder stocks are in best request of any of the mineral lubricants, but owing to the sharp competition for trade and the large offerings of both local and out-of-town houses, prices are kept extremely low and 16c is about the best figure that may be expected for light filtered 600° fire test of best quality. Dealers claim to realize as high as 18c for some favorite makes, but no sales of consequence have been made at that figure, which is about the best that can be realized in a jobbing way. Light filtered of lower fire test are hard to sell at anything like their value, although dealers name prices that can scarcely be expected for best stock. Dark filtered have a fair share of attention and range all the way from 11c to 15c, according to fire test, etc. Dark steam refined is not wanted, but may be picked at from 10c to 13c, as to quality.

Neutral.—Competition does not appear to be as strong in this class of oils as some of the others and prices have consequently been kept pretty steady. The demand has been fair and the supply has been increased, as is usual at this season of the year. The principal requirement appears to be that the oil shall be bloomless, but beyond that purchasers care to pay little for any difference in quality, claiming the only requirement for mixing purposes is that the oil shall be bloomless. Thus while for 32° gravity bloomless oil of best quality will realize only 20c, and oil not near so carefully made, and off in color, but bloomless, will sell readily at 18c. For 34° gravity 16@17c is quoted, and for 37° gravity 15c is the best figure. For jobbing parcels 2@3c advance is obtained by dealers.

Paraffine.—These oils are probably in a more unsatisfactory condition than any other of the mineral lubricants. The competition is active, and supplies are sent to this market far in excess of requirements, the result is a constant depression of values and a terribly disorganized market. For 25° gravity the nominal price is 10c, but there is no difficulty in securing a round lot for 9½c. This state of affairs is largely due to the course of some refiners who ship this oil here with directions to sell at best prices obtainable, and as the supply is far in excess of the demand, the result is as we have shown. For 28° gravity is freely offered at 7c, and sales at 6¾c are not exceptional, but this is also in large supply and being urged on the market, consequently no improvement need be expected. Other grades, especially the red, not being in so large supply, are doing relatively better.

LARD, TALLOW, ETC.

Lard.—The course of the market has been upward, and during the first few days of the present month a decided advance took place, but a reaction set in last Friday and several points were lost. The fluctuations are so sudden and at times unexpected that it is difficult to review the month's transactions without giving a tabulated statement of sales and prices. The latest sales were at $6.58@6.59 for July; $6.60@6.69 for August; $6.69@6.79 for September, and $6.62@6.72 for October.

Paraffine Wax.—Crude is somewhat unsettled and the views of holders appear to be governed by the size of their holdings. A shrewd buyer may be able to secure an important lot at his own price, while holders insist they realize 5½@6c for 128° m. p. For strictly 128° m. p. 5½c would be a round price, and sales have been made at 5c, while for 126°@128° m. p. 4¾c has been accepted. The fact is the market is overstocked, and until the supply is reduced and receipts are lighter, the present low values must be expected to continue. Neutral is purchasable at 4¾@5c, the latter figure for prime 126°. Refined has sold in a small way only and may be quoted at 8½@9c. for 130°@132° m. p., 10½@11c for 136° m. p. A large order could be placed at ½c under our inside quotations, but no large orders are here to fairly test the market.

Stearine.—The price has, of course, been affected by the advance in other hog products, and the market is somewhat buoyant. The latest sales were at 8c for city lard stearine, which is a reaction of ⅜c, but as the article fluctuates nearly every hour in the day it is difficult to predict what it may be by the time this reaches our readers. The sales have been very large the past ten days, aggregating over 2,000,000 pounds.

Tallow.—The transactions have been of unusual magnitude during the past fortnight, due to the general upward tendency of all animal greases, and the fluctuations have been sharp and frequent. The latest sales were at 3⅞@4c.

Our New York representative furnishes the following quotations for the wholesale market on mineral oils:

Black reduced, 29 gravity, 25@30° cold test ℔ gal	7½— 7¾
Black reduced, 29 gravity, 15° cold test	8¼— 8¾
Black reduced, summer	6 — 6½
Cylinder, light filtered, 600° fire test	16 — 20
Cylinder, dark filtered, 600° fire test	13 — 15
Cylinder, cold test filtered	25 — 28
Cylinder, dark steam refined	8½— 10
Franklin, natural, 32 gravity	18 — 20
Neutral filtered, 32 gravity	18 — —
Neutral filtered, 34 gravity, bloomless	16 — 17
Neutral filtered, 37 gravity, bloomless	14 — 15
Neutral filtered, 32 gravity, wool stock	11 — 13
Paraffine, 22½ gravity	14 — 15
Paraffine, 25 gravity	9 — 10
Paraffine, 28 gravity	7 — 7¼
Paraffine, 30 gravity	7 — —
Red, 22½-23 gravity	13 — 14
Smith's Ferry, 33 gravity	7½— 8
Smith's Ferry, 34 gravity	7 — 7¼
West Virginia, natural, 29 gravity	18 — 23

Crude.—Paraffine wax with melting point at 126° is rated at 5¼@6c per pound, and with melting from 128° to 130° the prices 5½@6¼c. Refined paraffine is quoted from 10 to 12½c per pound.

Petrolatum.—Messrs. G. Blair & Son, of Corry, Pa., pioneers in the trade, furnish the following quotations on petrolatum in fifty pound packages: White B. B., 16c per pound; light yellow C., 11c; yellow D., 10c; vetinary F., 9c. They put up nine different grades and sell barrel lots at lower rates. This year they have a contract to supply the United States Government with 2400 pounds at 120° melting point.

REFINERS' SUPPLIES.

Acid.—In the region sulphuric acid in carboy lots 66° is sold to druggists for 75c per 100 pounds. Large lots are furnished refiners at lower rates. The New York market is quoted July 14th: Sulphuric 60°, $1.00@1.10; 66°, $1.10@1.30. The mixed acid used extensively in the region, in the manufacture of glycerine, has an average price of 3½c per pound and purchases are reported as low as 3¼c. It consists of 66° sulphuric acid

mixed with nitric acid of 48°. At one time mixed acid sold for 6c per pound in the region.

Glycerine oil is sold by the drum at 13c per pound.

Heavy Chemicals.—The *Shipping List* of July 17th says: The general demand continues to improve slowly, but steadily, and a better feeling prevails. It notes the sale of 500 drums of caustic soda at $2.50@2.55.

The following are quotations by grades:

Caustic Soda, 60 ₱ cent	$2 70 —2 90
Caustic Soda, 70 ₱ cent	2 50 —2 55
Caustic Soda, 74 ₱ cent	2 45 —2 50
Caustic Soda, 76 ₱ cent	2 47½—3 00

In a circular issued June 26, 1886, Messrs. Joseph P. Brunner & Co., of Liverpool, say:

Our market for chemicals is rather firmer this week for caustic soda and bleaching powder, but the actual business reported is not large. Soda ash—There have been further inquiries this week, but buyers' idea of prices are too low for business. We quote caustic ash 48 per cent., 1@1 1-16d; high test, 1 1-32@1 1-6d. For carb ash quotations range from 1 1-6@1¼d, according to brand and strength, but with an order firm in hand we think the lower quotation might be slightly shaded, if not particular as to make. Soda crystals are rather stiffer at £2 12s 6d@£2 15s, but are not selling freely. Caustic soda firm at £8 5s for 70 per cent. and £7 5s for 60 per cent., and a fair quantity of the lower test has been sold at the price named. Some large American orders have been received at £8 for 70 per cent., but there are no sellers at under £8 5s.

THE HOOP IRON MARKET.

The *Iron Age* of July 15 says of the manufactured iron market: There is a fair and increasing business and the indications at present point to at least an average fall trade; some think it will be above an average. Prices are still quoted on a basis of $1.65@1.70 for first quality iron, and 1-10@2-10c for old rail iron. A good many buyers are willing to pay the difference for the former. Hoop iron is quoted for 1¼c to 2c in Nos 16, 17 and 18, 2-9c and 1-10c per pound extra is charged for cutting hoops to specified lengths, hence oil barrel hoops 1¼ to 2 inch, cut to length, 9 to 11 pounds, set of six hoops, 3c. For export oil barrels a set of hoops weighing 12 pounds and for the home trade a set of 10 pound weight is used. The end and bilge hoops are 1¾ inches in width and the quarter hoops 1½ inches.

PAINTS.

The *Shipping List* of July 17th says: There has been a quiet market for all descriptions, no transactions of magnitude in any article under this heading having come to our notice, the sales reported being wholly of a jobbing character. Prices are steadily maintained at quotations.

White Lead.—The market for lead in oil remains quiet, with no business transacted in excess of jobbing parcels. We quote 7c net, on purchases of 500 pounds and over, and 7½c for small lots, with the usual terms for cash, and rebates allowed at the end of the year, according to quantity bought.

The following are quotations on colors used by refiners:

Chome yellow ₱ lb.	10 — 15
Prussian Blue pure	28 — 45
Prussian Blue, low grade	6½— 10
Lead in oil	7 — 7½

GLASS.

The following is the market for glass:

Extra white ₱ lb.	20 — 24
Medium white	17 — 20
Medium blue	12 — 14
Low grades	6½— 10
English	14 — 18
French	14 — 18
German	9½— 12
Irish	15 — 17

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	June, 1886. Wells.	Prod'n.	Dry.	May, 1886. Wells.	Prod'n.	Dry.
Scio	1	6	0	1	8	0
Alma	6	31	0	7	33	0
Wirt	8	56	0	10	45	4
Bolivar	3	16	0	2	8	0
Clarksville	10	79	0	12	75	1
Genesee	0	0	0	2	9	0
Miscellaneous	3	0	3	0	0	0
Total	31	188	3	34	178	5

BRADFORD FIELD.

Division of Field.	June, 1886. Wells.	Prod'n.	Dry.	May, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	11	66	0	11	64	3
Kendall Creek	2	18	0	2	20	0
Foster Brook	4	24	0	8	48	0
Knapp's Creek	3	15	0	8	44	0
Four Mile	1	8	0	1	8	0
Indian & Meeks Creeks	7	52	0	7	56	0
Cole Creek	6	76	0	2	65	0
Kinzua	0	0	0	3	30	0
Miscellaneous	2	3	1	3	0	3
Total	36	262	1	45	335	6

WARREN AND FOREST.

District.	June, 1886. Wells.	Prod'n.	Dry.	May, 1886. Wells.	Prod'n.	Dry.
Glade	11	42	2	9	79	1
Clarendon	19	105	0	25	138	0
Tiona	30	183	0	25	172	0
Cooper	1	5	0	0	0	0
Balltown	6	155	2	5	185	0
Kane	52	2168	3	55	3828	6
Grand Valley	50	432	8	41	587	4
Miscellaneous	4	0	4	4	0	4
Total	173	3090	19	164	4989	15

LOWER COUNTRY.

District.	June, 1886. Wells.	Prod'n.	Dry.	May, 1886. Wells.	Prod'n.	Dry.
Venango	56	2350	8	47	510	15
Clarion	18	207	1	18	147	1
Butler and Armstrong	26	786	6	24	446	6
Washington	12	1879	6	10	4860	3
Shoustown, Etc	20	265	12	9	123	6
Total	132	5487	33	108	6086	31

GRAND SUMMARY.

District.	June, 1886. Wells.	Prod'n.	Dry.	May, 1886. Wells.	Prod'n.	Dry.
Allegany	31	188	3	34	178	5
Bradford	36	262	1	45	335	6
Warren and Forest	173	3090	19	164	4989	15
Lower Field	132	5487	33	108	6086	31
Total June	372	9027	56	351	11588	57
Total May	351	11588	57			
Difference	21	2561	1			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	June 30, 1886. New Rigs	Old Rigs	Drilling	Total	May 31, 1886. New Rigs	Old Rigs	Drilling	Total
Scio	0	4	0	4	0	4	1	5
Alma	0	10	4	14	4	12	5	21
Wirt	7	8	8	23	7	7	9	23
Bolivar	0	4	1	5	0	4	2	6
Genesee	0	11	0	11	0	11	0	11
Clarksville	6	7	11	24	11	9	8	28
Miscellaneous	0	0	0	0	0	0	2	2
Total	13	44	24	81	22	47	27	96

BRADFORD FIELD.

Division of Field.	June 30, 1886. New Rigs	Old Rigs	Drilling	Total	May 31, 1886. New Rigs	Old Rigs	Drilling	Total
E. and W. Branches	3	10	11	24	4	10	15	29
Kendall Creek	0	1	1	2	0	2	1	3
Knapp's Creek	0	7	3	10	1	7	3	11
Foster Brook	4	6	2	12	4	3	6	13
Four Mile	0	3	0	3	0	4	1	5
Indian Creek	5	5	7	17	6	5	7	18
Cole Creek	1	4	3	8	2	4	4	10
Kinzua	1	0	2	3	0	1	1	2
Miscellaneous	1	0	0	1	0	0	2	2
Total	15	36	29	80	17	36	40	93

WARREN AND FOREST.

Division of Field.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	2	2	7	11	5	2	10	17
Clarendon	8	6	13	26	10	1	11	22
Tiona	9	7	16	32	8	11	21	40
Cooper	0	2	0	2	0	2	1	3
Balltown	2	2	6	10	0	2	6	8
Kane	17	2	65	84	20	2	69	91
Grand Valley	31	1	33	65	24	1	31	56
Miscellaneous	3	0	5	8	1	0	5	6
Total	72	21	145	238	68	21	154	243

LOWER COUNTRY.

Division of Field.	June 30, 1886 New Rigs.	Old Rigs.	Drilling.	Total.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	42	9	43	94	23	13	34	70
Clarion	14	11	12	37	9	8	18	35
Butler & Armstrong	20	5	48	73	13	2	39	54
Washington	11	7	80	98	21	8	63	92
Shoustown, Etc	11	10	21	42	13	2	32	47
Total	98	42	204	344	79	33	186	298

GRAND SUMMARY.

Field.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	May 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	13	44	24	81	22	47	27	96
Bradford	15	36	29	80	17	36	40	93
Warren and Forest	72	21	145	238	68	21	154	243
Lower Country	98	42	204	344	79	33	186	298
Total	198	143	402	743	186	137	407	730
Total May 31	186	137	407	730				
Difference	12	6	5	13				

The Macksburg Field in June.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2186
April	64,137	7890	2401
May	58,596	6650	2104
June	65,379	2871	2275

There were completed in the Macksburg field during June 15 deep and 1 shallow wells, 2 deep and 1 shallow dry holes. The production shows an increase of 171 barrels, while May decreased 297 barrels a day from the April yield. The number of producing wells on the 1st of July is 427, and the average production a little more than 5 barrels apiece. On the last of the month there were 10 rigs up and building and 17 drilling wells in this field.

Boden & Aiken completed a duster on Cats Creek, four miles west of Macksburg; it was drilled through the deep sand. The two other dusters were drilled by Clark & Wickens, on the Wickens' farm, two miles west of Macksburg. The Stafford Oil Company, on the Robinson farm, ten miles northeast of Macksburg, found 32 feet of sand about 100 feet below the bottom of the salt sand, and at a depth of 1318 feet. The salt sand was very much broken up, and contained no water. When the oil sand was struck the hole filled up 400 feet with 44½ degree oil, during the first twelve hours. The well is considered in a stray sand and will make a small producer.

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	JUNE, 1886.	MAY, 1886.
National Transit Co	1,784,613.38	1,749,417 47
Tidewater	212,112.91	181,134.21
Octave Oil Co	3,058.00	3,263.00
Shaffer Run	364.50	1,141.50
Franklin (limited)	6,609.46	6,364.72
Pittsburgh Pipe Line	23 097.30	22,096.38
Southwest Pennsylvania	244,470.06	163,248.14
Total	2,274,325.61	2,126,665.42
Daily average	75,810.85	68,602.11

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	JUNE, 1886.	MAY, 1886.
National Transit Co	1,784,846.92	1,692,943.26
Tidewater	186,222 79	190,714.46
Octave Oil Co	3,142.26	3,004.00
Shaffer Run	-------	309.95
Franklin (limited)	5,045.98	5,212.73
Pittsburgh Pipe Line	23,097.30	22,096.38
Southwest Pennsylvania	128,168.10	89,405.65
Total	2,130,523.35	2,003,686.43
Daily average shipments	71,017.44	64,635.05

In the above shipments only the oil delivered to refiners is included.

Daily excess of runs over shipments, June	4,793.41
Daily excess of runs over shipments, May	3,967.06
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August	11,099.01
Daily excess of shipments over runs, July	5,959.01
Daily excess of shipments over runs, June	7,992.05
Daily excess of shipments over runs, May, 1885	10,502.60

NET STOCKS.

PIPE LINE.	JUNE 30, 1886.	MAY 31, 1886.
National Transit Co	31,227,984.65	31,177,944.82
Tidewater	1,326,254.53	1,277,773.68
Octave Oil Co	3,468 21	3,288.00
Shaffer Run	23,031 64	23,014.00
Franklin (limited)	45,906.80	44,343.32
Pittsburgh Pipe Line	--------	--------
Southwest Pennsylvania	245,662.96	129,369.00
Total	32,872,308.79	32,655,724.82

Stocks increased June	216,583.97
Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174 57
Stocks decreased February	436,146 69
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October	184,393 91
Stocks decreased September	408,862.12
Stocks decreased August	390,529.99
Stocks decreased July	215,947.71
Stocks decreased June	356,849 49
Stocks decreased May	565,252.48
Stocks decreased April, 1885	42,525.72

	RECEIPTS.	DELIVERIES.
Daily average June	75,811	71,017
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,124
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,901	67,893
Daily average May, 1885	57 135	67,637

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

AVERAGE DAILY RUNS BY DISTRICTS, INCLUDING MACKSBURG—1882-86.

	Bradford	Allegany	Cherry Grove	Cooper	Balltown	Wardwell	Baldridge	Cogley	Macksburg	Kane	Washington	All Other Fields	Total
1882.													
January	55,006	7,222	----	----	----	----	----	----	----	----	----	11,541	73,769
February	63,313	9,512	----	----	----	----	----	----	----	----	----	10,722	83,547
March	58,078	14,760	----	----	----	----	----	----	----	----	----	10,894	83,732
April	53,108	17,622	----	----	----	----	----	----	----	----	----	10,395	81,125
May	55,955	19,522	218	----	----	----	----	----	----	----	----	11,262	86,957
June	56,016	22,765	3,037	----	----	----	---	----	----	----	----	13,968	95,786
July	52,456	23.884	8,655	----	----	----	----	----	----	----	----	19,311	104,306
August	49,711	20,814	24,315	----	----	----	----	----	----	----	----	10,985	105,825
Sep tem	46'585	16,387	23,002	----	----	----	----	----	----	----	----	10,567	96,541
October	42,107	19,964	9,363	129	----	----	----	----	----	----	----	14,286	85,840
Novem	41,404	16,993	4,886	294	----	----	----	----	----	----	----	10,012	74,589
Decem	39,580	14,020	3,180	558	87	----	----	----	----	----	----	14,993	72,419
1883.													
January	36,487	14,106	3,313	1,632	334	----	----	----	----	----	----	8,893	65,125
Februa'y	38,481	13,154	2,954	1,475	332	----	----	----	----	----	----	8,812	65,208
March	37,754	12,619	2,706	1,737	368	----	----	----	----	----	----	9,220	64,404
April	38,810	13,742	2,604	3,802	840	----	----	----	----	----	----	9,409	69,207
May	39,039	13,793	,2207	3,829	952	----	----	----	----	----	----	9,625	69,445
June	38,614	13,499	2,215	4,199	1,961	----	----	----	----	----	----	9,955	70,443
July	36,489	12,381	1,891	3,467	1,944	----	----	----	----	----	----	9 456	65,628
August	37,165	12,743	1,935	3,166	3,078	----	----	----	----	----	----	10,790	68,877
Septem	35,894	12,358	1,612	3,200	3,723	----	----	----	----	----	----	9 423	66,210
October	35,654	12,757	1,312	3,314	4 298	----	----	----	----	----	----	10,314	67,649
Novem	34,516	12,332	1,000	3,251	3,807	----	----	----	----	----	----	10,285	65,281
Decem	32,650	11,752	1,061	2,876	3,766	----	----	----	----	----	----	10,725	62,830
1884.													
January	31,020	11,018	767	2,908	2,808	----	----	----	86	----	----	9,657	58,264
Februa'y	33,987	12,025	968	3,743	2,816	----	----	----	51	----	----	11,034	64,624
March	33,049	11,777	1.001	4,631	2,813	----	----	----	86	----	----	11,319	64,676
April	34,370	12,261	1,039	4,229	2,399	475	844	----	113	----	----	10,176	65,906
May	34,946	12,193	968	3 468	2,260	1,015	1,061	----	136	----	----	10,777	66,824
June	35,701	11,672	845	2,985	2,250	2,042	969	----	211	----	----	10,886	67,561
July	34,718	11,114	523	2,476	2,471	4,277	889	----	249	----	----	10,234	66,951
August	33,782	10,384	665	2,046	2,189	6,483	843	----	258	----	----	10,6 4	67,254
Septem	33,449	9,989	653	2,155	2,115	4,056	2,644	----	334	----	----	10,891	66,286
October	31,500	8,802	446	1,811	1,781	2,201	6,034	----	350	----	----	10,489	63,414
Novem	29,552	8,642	423	1,302	1,401	1,346	9,493	----	431	----	----	9,592	62,182
Decem	30,632	8,193	407	1,246	1,189	979	8,730	----	315	----	----	10,367	62,058
1885.													
January	27,254	7,442	360	1.214	810	977	6,199	----	384	----	----	9,034	53,674
Februa'y	27,480	7,696	327	987	910	663	7,349	----	637	----	----	9,564	55,613
March	26,833	7,342	373	867	954	605	7,229	----	873	----	----	9,885	54,971
April	29,557	7,738	299	1,114	775	527	9,333	----	1,189	----	----	11,019	61,551
May	28,443	7,467	343	1,053	902	722	7,488	127	1,557	----	----	10,879	58,981
June	30,662	7,680	439	1,000	1,044	764	5,905	609	2,233	----	----	11,983	62,319
July	30,657	7,363	467	906	1,032	647	3,856	1 220	2,441	----	----	10,283	59,872
August	29,291	7,102	363	923	930	----	2,268	2,115	2,382	----	----	12,731	58,105
Septem	30,151	6,647	312	918	944	----	2,921	3,244	2,270	----	----	13,830	60,337
October	30,828	7,081	428	777	925	----	1,898	4,9 9	2,053	----	----	14,194	63,123
Novem	29,117	6,667	303	707	1,030	----	1,469	5,416	2,031	----	----	14,162	60,902
Decem	30,376	6,738	442	749	1,182	----	1,420	5,241	1,971	96	----	14,054	63,269
1886.													
January	27,966	6,235	306	623	1,063	----	1,288	4,469	1,768	70	----	14,398	58,186
February	27,499	6.361	305	571	1,056	----	1,218	3,969	1,775	435	497	14,552	58,238
March	29,333	6,545	353	653	1,059	----	1,369	3,847	1,897	1,252	900	16,247	63,455
April	28,640	6,895	347	583	832	----	1,299	3,618	2,138	3,017	1,734	17,263	66,366
May	27,552	6,535	338	591	1,376	----	1,218	3,258	1,890	4,475	5,397	17,862	70,492
June	28,790	6,981	344	605	1,104	----	1,339	2,936	2,179	5,702	8,022	19,988	77,990

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for June, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of June		1,277,773.68
Quantity of crude petroleum at close of June	1,484,610.01	
Less sediment and surplus	158,355.45	
		1,326,254.53
Receipts during June		212,112.91
Deliveries during June—to refiners	186,222.79	
" " " to other parties		186,222.79
Outstanding certificates accepted orders, etc.		781,000.00
Credit balances		545,254.53
Total liabilities June 30, 1886		1,326,254.53

MAY SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of May		1,291,083.85
Quantity of crude petroleum at close of May	1,452,286.18	
Less sediment and surplus	174,512.50	
		1,277,773.68
Receipts during May		181,134.21
Deliveries during May—to refiners	190,714 46	
" " " to other parties		190 714.46
Outstanding certificates, accepted orders, etc.		767,000 00
Credit balances		510,773.68
Total liabilities, May 31, 1886		1,277,773.68

A FAIR vein of gas was struck on the 19th of June, on the brewery lands of Julius Binz, Buffalo.

BLUE print maps of the Ohio oil fields to be had at the AGE office, price two dollars each.

SUMMARY of the Statements of the National Transit Company for June and May:

	JUNE. Barrels.	MAY. Barrels.
Receipts from all sources	1,837,858.49	1,749,417.47
Deliveries	1,784,846 92	1,692,943.26
Gross stocks end of month	34,769,424.03	34,503,938.55
Sediment and surplus	3,541,439.38	3,325,993.73
Total liabilities end of month	31,227 984.65	31,177,944.82
Outstanding acceptances	24,889,259.78	25,570,037,53
Credit balances	6,338,724.87	5,607,907.29

The above "receipts from all sources" for June were made up as follows:

Runs from wells	1,784,613.38
Received from other lines	53,245.11
Total	1,837,858.49

THE McCrea gas well, in Butler county, furnishes fuel to the National Transit Pipe Line pump stations at Thorn Creek, Carbon Centre, Millerstown, Karns City and Parker, and also to oil wells in the Thorn Creek district. Besides this, eight hundred stoves are supplied in Millerstown, Karns City, Petrolia and Parker City. The net profits are said to amount to $2,000 per month, of which $1.600 are derived from the domestic use of the gas. Notwithstanding this liberal patronage, not one-half of the well's production is consumed.

Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) and arriving at Olean at 10·57 a. m. Connects at Olean for Bradford.

Train leaves Buffalo at 2:00 p. m. (except Sunday) arriving at Olean at 4:35 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:30 p. m. (daily) arrives at Olean at 8:10 p. m.

Train for Buffalo leaves Olean at 5:50 (daily) and 10:47 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:15 p. m.

Afternoon train leaves Olean at 3:58 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass. and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				May 23, 1886.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun
A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.
------	------	6 22	10 51	Ar. Richburg Lv	------	8 22	2 30	------
------	------	6 17	10 45	" Bolivar "	------	8 35	2 37	------
11 00	6 00	3 55	8 58	" Olean "	7 20	11 00	5 10	3 30
9 15	4 15	2 15	7 15	Lv. Bradford Ar	9 00	12 45	6 55	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 20	3 05	8 30	Ar. .....Eldred ..... Lv.	7 10	11 35	3 35
5 00	2 38	8 12	" ....Duke Centre... "	7 28	11 53	4 01
4 05	1 20	7 15	" .....Tarport..... "	8 25	12 50	5 25
3 50	1 10	7 10	Lv. .....Bradford..... Ar.	8 30	12 55	5 35
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			May 23, 1886.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	12 45	9 40	Lv.....Kinzua.....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren ..... Ar	------	11 50	6 49
5 15	------	8 50	" .....Irvineton ..... "	------	12 05	7 05
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	-----	8 45	Lv.....Pittsburgh.....Ar	-----	8 25	7 40
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

March 1, 1886—Eastern Time.

			STATIONS.			
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
------	6 45	11 10	Ar. .....Buffalo.. Lv	8 00	5 00	------
9 37	------	------	" .....Rochester ..... "	-----	------	7 50
------	------	------	" .....Salamanca..... "	------	------	------
		A. M.				
4 35	3 30	8 00	Lv.....Bradford..... Ar	11 15	8 15	12 30
		P. M.		P. M.		
------	------	12 40	Lv..... do .....Ar	3 05	------	------
------	------	3 22	" .....Ridgway..... "	12 15	------	------
------	------	4 44	" .....Falls Creek..... "	10 20	------	------
------	------	4 50	" ..... Dubois ..... "	1 14	------	------
				A. M.		
------	------	5 50	Ar .....Punxsutawney..Lv	9 00	------	------

☞ Thousand. Mile Tickets sold at Two Cents per mile. ☜

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Sup't. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one-half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	b	b		b	a	b
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
5 25	12 55	9 05	Ar..... Bradford.....Lv	7 35	3 55	10 30
4 40	12 10	8 20	Lv... Kinzua Junction... "	8 20	4 40	11 25
4 30	11 20	8 10	" ..... Aiken ..... "	8 33	4 53	12 25
4 16	11 00	7 56	" .....Simpson..... "	8 49	5 09	12 45
3 35	10 00	7 15	" .....Smethport ..... "	9 30	5 50	1 45
4 30	12 01	8 10	" .....Rew City..... "	8 29	4 49	11 40
4 05	11 37	------	" ..... Rixford..... "	8 45	5 05	12 26
4 00	11 32	------	" .....Duke Centre..... "	8 49	5 09	12 35
3 43	11 15	------	" .....Eldred ..... "	9 07	5 27	1 00
3 26	10 58	------	" ..... Bullis Mills..... "	9 24	5 44	1 37
3 11	10 43	------	" .....Ceres..... "	9 40	6 00	1 55
2 57	10 29	------	" .... Little Genesee..... "	9 54	6 14	2 15
2 48	10 20	------	Lv.....Bolivar ..... Ar			2 30
			Ar.....Bolivar Lv	10 03	6 23	2 48
2 23	9 53	------	Lv..... Allentown ....., "	10 27	6 47	3 25
P. M.	A. M.			A. M.	P. M.	P. M.
1 50	9 29	------	Lv..... Wellsville. .....Ar	11 00	7 20	4 10
			N. Y., L. E. & W. R R.			
12 40	7 50	------	Ar.....Hornellsville Lv	12 00	8 20	7 45
				P. M.		
------	6 26	------	" .....Corning..... "	1 25	9 51	------
------	5 48	------	" .....Elmira..... "	1 55	10 25	------
------	5 12	------	" .....Waverly ..... "	2 22	10 36	------
------	4 36	------	" .....Owego ..... "	2 53	11 31	------
					A. M.	
------	3 53	------	" .....Binghamton..... "	3 31	12 11	------
------	8 00	------	Lv.....New Yo k.....Ar	10 20	7 30	------
	P. M.			P. M	A. M.	

Sunday train leave Wellsville at 7.30 a. m., Bolivar at 8.28, Ceres at 8.51, Eldred at 9.24, Duke Centre at 9.42. Rixford at 9.47, Rew City 10.06, Smethport 9.10, Simpson 9.51, Aiken 10.05, arriving at Bradford at 11 a, m.

Additional train leaves Wellsville daily, except Sunday, at 5.25 p. m., arriving at Allentown at 5.45, and Bolivar at 6.15 p. m.

Additional train leaves Bolivar daily, except Sunday. at 10.30 a. m., arriving at Eldred at 11.50 a. m. and Bradford at 3.45 p. m.

Tickets for sale at 132 Main street and at the Union depot

a—Runs daily. b—Runs daily except Sunday.

JOHN C. McKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect June 14, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo.....Lv	7 45a. m.	12 30p.m.	4 45p.m.	.....
Oak Harbor.....Ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde.....	9 23	2 03	6 18	.....
Bellevue.....	9 38	2 18	6 32	.....
Monroeville.....Lv	9 57	2 32	7 01	1 35a. m.
Norwalk.....	10 13	2 50	7 20	1 50
Wellington	11 03	3 45	9 00	2 32
Creston..... Ar	11 52	4 33	10 45	3 15
Orrville.....Ar	12 20p.m.	5 05	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 05	6 00a. m.	6 00
Massillon.....Ar	1 20	5 45	6 40	6 40
Massillon.....Lv	1 20	5 45	6 40	6 40
Bowerston .....Ar	3 00p.m.	7 35p.m.	9 40a, m.	9 40a.m.
Canal Dover.....	2 38p.m.	.....	8 00a. m.	8 00a.m.
Newcomerstown	3 27	.....	8 47	8 47
Cambridge.....	4 30	.....	9 45	9 45
Macksburg	6 10	.....	11 38	11 38
Marietta ... .Ar	7 20p m.	.....	12 50p.m.	12 50p.m.

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta Lv	6 20a. m.	2 30p.m.	------	.....
Macksburg.....	7 25	3 42	.....	.....
Cambridge.....	8 54	5 20	.....	.....
Newcomerstown	9 48	6 20	.....	.....
Canal Dover.....	10 28 a.m.	6 55p.m.	.....	.....
Bowerston	11 50 a m.	3 30p.m.	6 25 a.m.	.....
Massillon.....	1 20p.m.	8 45	8 12	.....
Orrville.....Ar	1 55	9 55	8 50	.....
Orrville.....Lv	2 00	10 15*	8 50	.....
Creston Lv	2 30	10 45	9 22	.....
Wellington	3 18	11 28	10 10	*
Norwalk.....	4 10	12 10	11 25	7 25a. m.
Monroeville.....	4 12	12 25a. m.	11 37	7 37
Bellevue	4 40	*	11 55	7 53
Clyde	4 56	.....	12 10p.m.	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo.....Ar	6 35p.m.	.....	1 55p.m.	9 45a. m.

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
5 15p.m.	11 40a.m.	Ar.....Huron.....Lv	6 25a. m.	2 05p.m.
4 30p.m.	10 45a.m.	Lv.....Norwalk.....Ar	7 15a. m.	3 00p.m.

* Daily.

This road is now open through from Toledo to Bowerstown, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE—Between Toledo, Cambridge and Marietta; Toledo and Bowerstown; Toledo and Akron, Youngstown and Pittsburgh; Chicago, Akron, Youngstown and Pittsburgh.

M. D. WOODFORD, General Manager. JAMES M. HALL, Gen'l. Pass. Agent.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JUNE 14th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
N. Y., L. E. & W. R. R		P. M.	A. M.	A. M.	A. M.
Bradford .....Lv.	.....	2 20	.....	6 15	11 40
Mt Jewett .....Lv.	.....	5 00	.....	7 40	12 30
Kane	.....	5 40	.....	10 46	1 20
Sheffield Junction	.....	.....	.....	11 40	2 15
Marienville	.....	.....	.....	12 20	3 02
Tylersburg.....	.....	.....	.....	1 00	3 48
Clarion Junction.....	.....	.....	7 00	1 40	4 30
Clarion	—	.....	6 30	1 15	4 05
Shippenville.....	23	.....	7 12	1 53	4 45
Knox	—	.....	7 30	2 08	5 00
St. Petersburg.....	A. M.	.....	8 20	2 48	5 40
Foxburg	5 40	.....	8 50	3 25	5 55
Parker	5 50	.....	9 00	3 42	.....
Bruin	6 08	P. M.	9 20	4 02	P. M.
Petrolia.....	6 18	—	9 32	4 15	—
Karns.....	6 22	27	9 38	4 20	9
Millerstown.....	6 36	—	9 55	4 38	—
St. Joe	6 50	A. M.	10 08	4 53	P. M.
Butler.....	7 20	8 38	10 40	5 40	1 55
Renfrew.....	7 41	8 55	11 00	6 00	2 11
Callery Junction.....	8 10	9 20	11 25	6 25	2 35
Allegheny .....Ar.	10 30	10 30	12 40	7 35	3 58
	A. M.	A. M.	P. M.	P. M.	P. M

NORTHBOUND TRAINS.

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A. M.	P. M	P. M.
Allegheny .....Lv.	6 00	9 20	7 20	1 46	5 35
Callery Junction.....	7 30	10 40	8 34	3 07	6 50
Renfrew.....	7 58	11 00	8 55	3 29	7 12
Butler	8 20	11 20	9 15	3 55	7 33
St. Joe	.....	.....	9 40	4 25	8 00
Millerstown.....	.....	A. M.	9 55	4 38	8 14
Karns.....	.....	—	10 12	4 54	8 28
Petrolia.....	.....	20	10 16	4 58	8 32
Bruin	.....	—	10 32	5 10	8 43
Parker.....	.....	A. M.	10 52	5 28	9 00
Foxburg	.....	6 25	11 25	6 00	9 10
St. Petersburg.....	.....	6 40	11 40	6 17	.....
Knox.....	.....	7 30	12 25	7 00	.....
Shippenville.....	.....	7 48	12 40	7 18	.....
Clarion Junction.....	.....	8 02	12 55	7 30	P. M.
Clarion	.....	8 25	.....	8 00	—
Tylersburg	.....	8 59	1 30	.....	22
Marienville	.....	9 18	2 10	.....	—
Sheffield Junction.....	.....	10 00	2 50	.....	A. M.
Kane	.....	10 55	3 35	.....	6 30
Mt. Jewett .....Ar.	.....	12 10	4 40	.....	7 10
Bradford .....Ar.	.....	2 05	6 05	.....	9 15
		P. M.	P. M.	P. M.	A. M.

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.35 a. m., New Castle Accommodation 3.10 p. m., Chicago Express, with through Sleeping Car, 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAINS Nos. 23 and 26 will run daily. Nos. 18 and 17 will run daily between Butler and Allegheny. No. 23 connects at Callery Junction for Allegheny and New Castle. No. 26 gets connections from Allegheny and New Castle. All other trains run daily, except Sunday.

THOS. M. KING, General Manager.
C. W. BASSETT, General Passenger Agent.

Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT MAY 10, 1886.

[Read Down.]		Central Time.	[Read Up.]	
5 00a.m.	8 15a.m.	.....Bradford.....	6 20p.m.	11 35 a.m
5 30a.m.	10 55a m.	.....Salamanca.....	4 13p.m.	8 00 a m
6 45a.m.	11 55a.m.	.....Jamestown.....	3 08p.m.	7 09 a.m
9 20a.m.	2 20p.m.	.....Meadville.....	12 50p m.	5 15 a.m
10 55a.m.	5 40p.m.	.....Youngstown.....	10 35a.m.	1 25 a.m
12 52p.m.	7 30p.m	.....Shousetown.....	8 26a m.	11 25 p.m
1 30p m.	8 00p.m.	.....Pittsburgh.....	7 45a.m.	10 45 p.m

W. C. Quincy, General Manager.
A. D. Smith, General Pass. Agent.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R.R

[illegible] 4, 1885.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	[illegible]	2 45p.m.	7 35a.m.
Irvincton	[illegible]	4 02p.m.	8 41a.m.
Warren	[illegible]	5 17p.m.	8 56a.m.
Junction	[illegible]	[illegible] m.	9 48a.m.
Lily Dale	[illegible]	[illegible]	10 37a.m.
Dunkirk, arrive	[illegible]	[illegible]	12[illegible]a.m.
Going South.	No. [illegible]	[illegible]	[illegible]nday. No. 5.
Dunkirk, leave	9 40a.m.	[illegible]	2 40p.m.
Lily Dale	10 13a.m.	4 [illegible]	3 14p.m.
Junction	11 05a.m.	5 45p.m.	4 08p.m.
Warren	12 m.	6 44p.m.	5 06p.m.
Irvineton	12 15p.m.	7 00p.m.	5 22p.m.
Titusville Ar	1 30p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p. m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily. Uniontown, 10:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m, Arrive, 7:00, 9:00, 10:20 a. m., 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m. Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.
B. DUNHAM, General Manager.
E. D. SMITH, Division Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after May 31st, '86, trains will leave Emporium as follows:

For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:25 a. m., and 9:05 p. m. on week days. Pullman sleeping car on the 9:05 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 10:40 a. m. week days.

For Kane and intermediate stations, 10:40 a. m. and 7:05 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.
CHAS. E. PUGH, General Manager.

Shenango & Allegheny R. R.

TAKES EFFECT MONDAY, JUNE 14, 1886.
Trains are run by Standard Central Time (90th Meridian.)

NORTHWARD.			STATIONS.	SOUTHWARD.		
6	4	2		1	3	5
P. M.	A. M.	A. M.		A. M.	A. M.	P. M.
6 37	11 40	8 25	Ar.....Greenville.....Dp	6 07	11 10	3 20
6 27	11 30	8 15	.....Shenango.....	6 17	11 22	3 33
6 15	11 17	8 03	.....Kremis.....	6 29	11 36	3 44
6 06	11 09	7 54	.....Fredonia.....	6 37	11 45	3 52
6 00	11 04	7 49	.....Coolspring.....	6 41	11 50	3 56
5 58	11 02	7 47	.....Kerby Siding.....	6 43	11 52	3 57
5 47	10 52	7 37	.....Mercer.....	6 54	12 04	4 08
5 37	10 42	7 27	.....Pardoe.....	7 03	12 14	4 17
5 32	10 37	7 22	.....Filer.....	7 07	12 19	4 22
5 23	10 31	7 16	.....Grove City.....	7 16	12 28	4 28
5 20	10 28	7 13	.....Reed.....	7 19	12 30	4 30
5 09	10 17	7 02	.....Harrisville.....	7 30	12 43	4 41
5 05	10 13	6 58	.....Wick.....	7 34	12 47	4 45
5 00	10 08	6 53	.....Branchton.....	7 40	12 52	4 50
4 58	10 06	6 49	.....Coaltown Junction.....	7 42	12 53	4 52
4 55	10 03	6 46	.....Keisters.....	7 45	12 56	4 55
4 44	9 57	6 40	.....Hailston.....	7 52	1 03	5 02
4 34	9 47	6 32	.....Euclid.....	8 03	1 13	5 11
4 23	9 37	6 22	.....Jamisonville.....	8 12	1 22	5 19
4 15	9 30	6 15	.....Oneida.....	8 22	1 31	5 25
4 05	9 20	6 05	.....P. & W. Junction.....	8 35	1 42	5 35
4 00	9 15	6 00	.....Butler.....	8 38	1 45	5 37
			Pittsburgh & Western R. R.			
1 46	7 20	....	Dp.....Allegheny.....Ar	10 30	3 58	7 35
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.

HILLIARD BRANCH.

10	12	STATIONS.	9	11
A. M.	A. M.		A. M.	P. M.
9 55	6 45	Ar.....Branchton.....Dp	7 45	5 10
9 45	6 36	.....Bovard.....	7 50	5 15
9 15	6 16	.....Annandale.....	8 10	5 40
9 00	6 08	.....Roy.....	8 20	5 58
8 40	6 00	Dp.....Hilliard.....Ar	8 30	6 15
A. M.	A. M.		A. M.	P. M.

Trains 4 and 5 run daily with through coach service between Allegheny, Chautauqua Lake and Jamestown, N. Y. All other trains daily except Sunday.

I. D. STINSON, G. P. A., Greenville, Pa.
J. T. BLAIR, Gen. Man., Greenville, Pa.

THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., AUGUST, 1886. No. 7.

THE GEOLOGY OF THE PITTSBURGH COAL REGION.

A PAPER READ BEFORE THE AMERICAN INSTITUTE OF MINING ENGINEERS, BY J. P. LESLEY, STATE GEOLOGIST OF PENNSYLVANIA.

[CONTINUED FROM PAGE 1359.]

THE OIL SAND GROUP.

THIS underlies the mountain sand group. Mr. Carll was the first to make it known that the first, secoud and third oil sands of Venango county form a single group, wonderfully regular in its total thickness of about 350 feet, and so persistent as a formation as to be everywhere recognizable. The importance of this scientific discovery in its practical applications to the wealth of the Pittsburgh region can hardly be overestimated; and one may well be surprised at the amount of facts to be collected and the patience and skill in combining the facts to be exercised before so simple a proposition was discovered to be true.

The first oil sand was struck in the Pittsburgh (Boyd's Hill) well, at 1435 feet beneath low water river level, as a white pebbly sand deposit, 112 feet thick, with slight show of oil, but flowing 4000 barrels of salt water per day. More than fifteeu years ago it was struck at Leechburg on the Kiskiminites, and a great rush of gas escaped from it which was afterwards utilized in the iron works. Recently it has become the *great gas rock* of the Murraysville district, east of Pittsburgh. It is now known to lie under Washington county at the same depth of 1800 feet beneath the Pittsburgh coal bed. It is there called the Gantz rock.

The second oil sand in the new Washington district is called the Fifty-foot, and the third oil sand is called the Gordon rock. From the top of the Gantz dowu to the top of the Gordon is about 260 feet. In Venango county the interval from the top of the first down to the top of the third oil sand varies between 260 feet and 290 feet.

Considering the great variations in the thickness of many Palæozoic formations, taken as a whole, and considering the infinite variability of the oil sand group in the details of its internal composition, *i. e.*, the local thickness and quality of each of its three sands, which at numerous points split up into four, five, and even ten layers, it is certainly an astonishing and most important phenomenon to see the group extending for 100 miles with an even thickness of about 350 feet, and always reassuming its normal aspect of a triple formation.

It must not be supposed that the great gas rock stands alone as the gas producer. Every sand rock which has yielded oil has yielded gas. The great gas flows of the Mead, Harvey, Mahan and some other famous blowers come from the Third Mountain sand (first Butler oil sand.) Hence. this rock received in Butler county the name of the *gas sand*. In the new gas developmet the First Oil sand now is so called. Ou the other hand, the immense old blowers, the Delamater, the Burns and the Thompson were fed from the third oil sands (Butler fourth.) The tremendous Wilcox gas well of McKean county, blows off under a pressure of more thau 400 pounds to the square inch, from a geological horizou 1000 feet still further down; and the steady old Fredonia well in New York delivers from a reservoir far lower still. In fact every oil sand and every mountain sand has yielded more or less gas; and we have seen that even the Mahoning sandstone in the Barren measures yields gas in the Dunkard creek region.

We can reach but one conclusion, namely, that the whole underground of Western Peunsylvania is more or less pervaded, permeated by uatural gas; it is hardly necessary to add that the gas only sets itself free in notable quantities through bore holes which reach the looser and coarser saudstone layers, through which it can move freely, in combination with its invariable associates, petroleum and salt water. The gas is undoubtedly evolved from the petroleum, being merely the more volatile elements of that fluid; and this is shown by the well-known fact that the petroleum held by rocks near the surface, from which, therefore, the more volatile elements have easily escaped into the air, is dark and heavy, or lubricating oil; while the petroleum obtained from great depths retains all its elements, no chance having been giveu to the more volatile to escape. The clay-luting of the under world has beeu so nearly perfect, that is, the petroleum has been so nearly hermetically sealed, at great depths, by the filling in of rock cracks with clay, that even the naphthas have scarcely escaped.

I may here add, in parenthesis, that this is the argumeut which weighs most iu my mind against one of the popular theories entertained by geologists, that all our petroleum has asceuded to the oil rocks from far greater depths in the lower formations or in the interior of the earth; for I confess myself unable to understand how the material could ascend 3000 feet or more from the Silurian or Lower Devonian rocks and there be arrested, unable to continue its ascent through the remaining one, two or three thousand feet to the surface. In addition to this capital objection, there is another, namely that it is has never been shown by auy one that hydro carbons in the gaseous forms, ascending from great depths, could be condensed, or in any way changed into liquid petroleum, and held in that form, ever after, by the porous saud rocks. But it is not my intentiou in this paper to present theoretical considerations. I wish merely to give the salient facts of the geology of the Pittsburgh region.

THE LOWER DEVONIAN ROCKS.

Beueath the third oil sand at Pittsburgh no oil is known to exist; but in the northern region of Warren county, aud in Forest county, pools of oil have been struck at several points in the sandy beds of the great Chemung formation No. VIII, which lies next under-

neath. These are the Warren oil sands. Far beneath them, again, that is to say 1000 feet beneath the oil sand group, lie the phenomenal Bradford oil rocks, extending into the State of New York. What other members of the Devonian formations are repositories of oil is not known; but we have every reason to believe that, if any exist, they are notably local, and, therefore, hard to find; and that when found, they will make but a slight impression upon the future oil production. This conviction is supported by the extreme irregularity of all the deposits of that age wherever they have been studied throughout Middle Pennsylvania. They have been examined in literally ten thousand places without exhibiting persistent sands. Evidently, unless sand deposits are persistent over considerable areas, even if they be charged with petroleum, the quantity must be small.

Among these Lower Devonian formations are considerable thicknesses of black shale, no doubt blackened by petroleum; and in the Western States bitumen fries from their outcrops under the sun. Still lower down are great limestone formations, such as the Upper and Lower Helderberg and Niagara limestones, full of fossils, both vegetable and animal, and showing petroleum at their outcrops in a way to make it perfectly clear that it is the product of the decomposition of organic matter. This fact was recorded by Professor James Hall, forty years ago. And twenty years ago, I showed that the petroleum Conglomerate formation in Eastern Kentucky was produced by the decomposition of fossil plants. The Canada petroleum, and the low petroleum of Kentucky, like the gas at Fredonia and Erie, are referable to strata which doubtless underlie Pittsburgh at depths of several thousand feet. I trust that the new deep well at Rochester will help us to a certain knowledge of their character and condition here.

IRREGULARITIES AND ANTICLINALS.

I have treated the geology of the Pittsburgh region as if all its formations lay perfectly flat or nearly so. But the exceedingly gentle slope from Lake Erie to Pittsburgh represents the northwestern side of a structural basin, the great Sixth bituminous coal basin. Its dip was calculated with great nicety by the First Geological Survey, and found to be at the rate of one-seventh of one degree, or about sixteen or seventeen feet in the mile.

The more minute and extensive surveys of the last ten years have shown that this slope is not a perfect plane; but that it has minute local variations, not indeed appreciable to the eye, but recognizable by a spirit level; and many of these irregularities have been located on the maps by a comparison of the tide levels taken at openings on individual coal beds. It appears that they are in some way connected with irregularities in the original deposits; and this is shown by the lines of rock sections; and also by the exceptional strong dips which are met with in mining the lowest coal beds. I do not think that they can be connected with the great system of anticlinal and synclinal plications of Middle Pennsylvania. I am disposed to assign them to quite another cause, namely, to a change in the bulk of each coal bed, both during the growth of its vegetation, and still more after it had become covered and pressed down by overlying deposits. For it is well understood that a peat bog while growing and lifting its back into the air above water level, goes on compacting its lower layers by the weight of its upper layers; and it is a physical necessity that many hundred feet of rock upon a coal bed must press it into a thickness only one-tenth or one-twentieth of the original thickness of the peat bog. Our venerable botanist Mr. Lesquereux's investigations in Europe half a century ago established all these points, and demonstrated the origin of coal beds; and he has recently given me a memoir to insert in the Annual Report of the Survey for 1885, which will be perfectly conclusive to every mind.

The Pittsburgh coal bed where it is now 12 feet thick must have been originally at least 150 feet thick; or rather it represented that amount of vegetation. Consequently, any irregularity in the thickness of a coal marsh must have been the cause of a settling of the whole column of stratified rocks above the coal bed to different depths at different places in after times. Now in the sum total of the thicknesses of all our bituminous coal beds, say 100 feet, we have a rude measure of the amount of settling of the whole column of coal measures. While the total amount of compression would be by the law of compensation the same over the whole region it would vary locally in proportion to the thickness of the coal beds. If we calculate it on the basis of a compression of only five feet of peat to one foot of coal we get a total descent of the top coal measures through a vertical height of 500 feet. Of course the details of the operation must be elaborately worked out; but I wish here to state the principle upon which I think the greater number of local irregularities of stratification are to be explained.

A very different view, however, has to be taken of the larger anticlinals about 10 miles apart, in a direction from northeast to southwest, approximately parallel with the tremendous rock waves of Middle Pennsylvania. They belong evidently to that system, and have been produced by the same unknown cause. I say advisedly, unknown cause, for, although it is practically certain that these great rock waves have been produced by a side thrust, connected in some way with the Azoic range of the Blue Ridge; and although it is also certainly true that the South Mountain country has been shoved bodily northwestward towards Lake Erie, a distance of between ten and twenty miles, wrinkling the earth's crust in that direction, yet all we know of the phenomenon is its consequences, the position and form of the waves, their original enormous height, and their subsequent erosion. As to the agency which produced the side thrust and lifted the anticlinals, fracturing some and overturning others, we know absolutely nothing. Nor will we ever know much about it until a true theory of the interior of the globe has been devised.

The First Geological State Survey laid down the lines of five great anticlinals, in Western Pennylvania which it numbered first, second, third, fourth and fifth—the first being that of Laurel Hill; the second, Chestnut Ridge; the third, Blairsville; the fourth, Saltsburg. The fifth crosses the Allegheny river at Brady's Bend. The Negro Mountain anticlinal was not counted in the series because it belongs to Virginia, and loses itself against the Allegheny mountain in Cambria county.

Intermediate secondary anticlinals were also located by the First Survey; such as the viaduct axis in the first basin; a small anticlinal runing through Ligonier Valley; and several others further west.

The Second Survey, however, has greatly enlarged the number of these secondary anticlinals. It has demonstrated the fact that the great anticlinals are not perfectly continuous, but are broken into sections which lie slightly diagonal to one another; and that all the anticlinals of Western Pennsylvania die down and rise again repeatedly. Some of the geological maps of the counties published by the Survey exhibit the anticlinal

lines; but all of the anticlinals are carefully described and located in the text of the several volumes of the reports, a matter of great importance in fixing the limits of the coal basins, and the direction of mining operations.

The first and second grand axes have dips so steep (from ten to thirty degrees) that they lift the sub-carboniferous formation into mountains and separate the coal measures into distinct basins. But in the Pittsburgh region proper, that is, between Chestnut Ridge and the Ohio line, the anticlinals are so low that a dip of 5° either eastward or westward is rarely seen; and usually the dip is only 3° or 2° or less than 1°. In the district around Pittsburgh, where a coal bed will rise or fall only say 100 feet in a mile, the location of the crest of an anticlinal becomes a matter of extreme difficulty; but it *can* be accomplished by a full and complete discussion of the levels above tide water of all the mine mouths in any given neighborhood; and by mapping the course of the underground workings. To this end the work of the Geological Survey is now being carried on; and a specimen of the work so done, an anticlinal map of the district between the Youghiogheny and the Monongahela rivers, will be published in the forthcoming report of 1885. On this map the *underground shape* of the Pittsburgh coal bed is shown by colored contour lines, such as are drawn to represent the undulations of the surface of a country. Another larger map shows all the anticlinals that have been approximately located in the Pittsburgh region.

But now I come to the main point. Quite recently the location of the anticlinal lines in the Pittsburgh region has become a sort of popular mania, produced by a theory. The whole community interested in the subject of natural gas has been carried away by a theory. Practical men and theorists have apparently changed sides; the so-called theorists maintaining a conservative attitude; the so-called practical men becoming wild theorists. And the theory to which I allude is the anticlinal theory of gas.

Stated in few words, it is a theory that oil, being lighter than water, must rise to higher levels. If the application of this theory was confined to bottles no one would dispute it; the water in a bottle must collect at the bottom, the oil in the middle, and the gas on top. But the earth is not a bottle. It has no great caverns in it. More than that, the arrangement takes place naturally under the pressure of only one atmosphere; while any arrangement of water, gas and oil made at depths of a thousand or two thousand feet, must be made under pressures of from 100 to 400 pounds to the square inch.

Mr. Carll recites a case where gas escapes at a pressure of 450 pounds to the square inch. It is impossible, therefore, that any arrangement of water, oil and gas can occur in the deep oil rocks, such as occurs in a bottle. If the anticlinals at Pittsburgh were like those in Middle Pennsylvania, where the rocks instead of lying nearly flat are turned up nearly vertical, the water, oil and gas at great depths, if they could exist at all, would remain practically mixed like the carbonic acid gas in a soda water fountain. It therefore seems to me irrational to assign any importance whatever to the extremely gentle anticlinals of the gas oil region.

To this I add the important consideration that the movements of oil and water have been shown by actual practice to be governed entirely by the character of the rock in which they take place, and that they are effectually stopped at fixed geographical lines where porous rock changes into sandstones and sandstones into shales. And these changes of character in the rock itself have no fixed relation whatever to the anticlinal waves, which on the contrary cross them transversely or diagonally.

Finally, sufficient instances can be adduced to refute the popular assertion that great gas wells are struck only on anticlinal lines; for some of them deliver gas from the bottom of basins. And on the other hand holes sunk on well-known anticlinal lines, and not far from good gas wells, have yielded little or no gas at all.

As this whole subject is dealt with by Mr. Carll in his forthcoming report I will say no more; nor will I go into the subject of the statistics of the gas yield, or its availibility for practical purposes. But I will add two opinions of my own, leaving them to stand for what they are worth.

1. As gas is a direct product of petroleum by spontaneous evaporation, the life of the gas production will be limited by the amount of the volatile elements held in a definitely limited quantity of petroleum existing underground; and therefore those who are producing and using this enormously valuable mineral substance should take every precaution to prevent its waste, seeing that it is bound to come to an end.

2. I have for a long time looked upon the extension of the Butler oil belt in a general southwest direction through Washington and Greene counties and into Virginia as probable, and I believe now more confidently than ever, since the drilling of the Washington district wells, that a considerable addition to our oil and gas wealth will be made in future years by a series of oil and gas strikes at greater depths in that direction. But thus far facts all point to a greater production of gas than of oil from that region.

Crude Market for July.

The crude market kept within the sixties all through July, which has proved the dullest and most unsatisfactory month of the year. Washington county is still regarded as the great bear factor in petroleum, but the production at Kane was well sustained, while other parts of the field continue to decrease. The runs are again ahead of the shipments and the surplus stock in iron tanks has again been augmented.

The month of July opened with crude certificates ranging from 68c to 68¼c, which were the highest figures of the month. There was a gradual weakening of values until 64⅜c was touched at Pittsburgh on the 10th. This was the lowest figure. On the 16th values had advanced to the 67¼c point, and on the 20th 68c was bid for a brief moment in all the Exchanges. The month closed with quotations of 65¾c at Bradford and Pittsburgh, ⅝c at Oil City and ⅞c at New York. The lowest quotation for June was 62¼c and the highest 71c.

The range of prices for July was but 3⅞c as compared with 8¾c in June, 12⅝c in May, and 7½c in April. The average price on the floor of the Bradford Exchange was 66c in July, against 67c in June, 69⅞c in May, 74c in April, 77⅛c in March, 80c in February. The average price for July one year ago was 96⅜c.

THE CLEARANCES.

	July. Barrels.	June. Barrels.
Bradford Oil Exchange	31,344,000	47,888,000
Oil City "	70,000,000	91,042,000
New York Consolidated Exchange	154,814,000	194,693,000
Pittsburgh Petroleum Exchange	60,900,000	77,316,000
Philadelphi Oil Exchange	12,923,000	16,643,000
Total	229,981,000	427,582,000

BLUE print maps of the Ohio oil fields to be had at the AGE office, price two dollars each.

OIL REGION CHRONOLOGY.

For July, 1886.

July 1.—Age oil report shows 372 wells completed in June, of which 56 are dry; new production, 9027 barrels; new rigs, 198; old rigs, 143; drilling 402; total field operations, 743; increase over May, 13. Washington field gauge reported off 700 barrels, but it was soon evident the bears were in the ascendancy. Market opened with sales at 68c, rallied to 68¼c, broke to 67⅛c and strengthened to 67⅜c. Towards the close it broke to 66¾c and closed at 66⅞c bid. Carrying rates—Bradford, 65c; New York, 60c; Oil City and Pittsburgh, 50c. Washington field gauge reported at 6580 barrels. Cameron 1, gauges 918 barrels; Smith 1, 159; No. 3, 626; Taylor, 515; Hall 2, 500; Clark 2, 600; M. & S., (Wylie) 340; Barre 1, 480; No. 2, 464; Munce 1, 425; No. 3, 525; No. 4, 226. Well at Cannonsburg reported spraying considerable oil at a depth of 2200 feet. Cameron 2 in lower sand and made 45 barrels in six hours. Lima reports 28 wells completed in June with a new production of 1093 barrels. Entire field now shows 57 producing wells doing about 1500 barrels a day. Coast & Sons, No. 13, on lot 420, Kane, fired from some unknown cause and burned with 700 barrels of oil. Jury at Smethport award Miss Ellen Carlisle $13,544, for damages received by a defective sidewalk on Corydon street, Bradford, in October, 1882. Bradford postoffice begins free delivery mail service.

July 2.—Market extremely sensitive under reports of an oil strike in the Cannonsburg gas district, Washington. Opened at 66⅞c, rallied to 67c and weakened to 66⅛c. About 2 o'clock there was a break to 65½c, at which point a small rally occurred to 66¼c. It closed at 66⅛c. Washington gauge 6535 barrels. Cameron 2, drilling in hard sand and made 132 barrels for twenty-four hours ending this morning. Cameron 1, made 882 barrels. Death of Deacon Andrew W. Cox, a prominent citizen of Oil City, aged 65 years. A heavy oil strike reported seven miles south of Corry, on the Gray farm, Concord township, Erie county.

July 3.—Market dull and featureless on account of approaching holiday. Opened firm at 66c and weakened to 65½c. Towards the close firmed up to 66⅜c, broke to 66c and closed at 66¼c. Gauge of Washington field 6382 barrels from 37 producing wells. Galligan well makes a small flow. First game of base ball on the new grounds of Bradford's notorious "island." Bradford defeats Franklin 13 to 5.

July 4.—Sunday. Independence Day. The Galligan well, on the Taylor tract, Washington, 16 feet in sand and showing for a good well. Large fire at Foxburg. Two grocery stores, two millinery shops, four dwelling houses and a barn destroyed.

July 5.—Holiday. No market. Bradford has no general celebration, but its ball club defeats a nine from Buffalo by a close score of 5 to 4. The explosion of a rack-a-rock blast in Newell place, kills a horse for the Emery Oil Company and causes a great deal of excitement about Lerch's printing office. Titusville, Warren and a few other oil region towns celebrate in good style, while Oil City follows Bradford's example. Kane production reported 4750 barrels from 180 wells. Eight hundred dollars worth of excursion tickets sold at Bradford to Independence Day flitters.

July 6.—Market very dull; opened at 66¼c, advanced to 66⅜c and broke to 66c. At 1:30 p. m. it fell off to 65⅝c. Afterwards rallied to 66c and closed at 65⅝c. Carrying rates 50 to 60c. Zeigler well, on Jordan farm, Shannopin, down and dry. Large demonstration in favor of Home Rule for Ireland, at Big Rink, Bradford. Col. Norton, of Chicago, addresses the meeting.

July 7.—Market opened at 65¾c, with a few sales at ⅞c, fell off to 65⅛c and advanced and closed at 65¾c bid. Washington—Willets, No. 7, on Munce, in sand and doing 16 barrels an hour. McKinney, No. 2, on Montgomery, drilling in good sand with no oil in sight. Cannonsburg well run three bits with no improvement. Two tank cars, containing oil, exploded at Cleveland. Six car loads of coal and a bridge destroyed; loss, $10,000.

July 8.—Market opened at 65⅞c, ranged between 66¾c and 65c and closed at 65⅛c. Carrying rates—Bradford and Pittsburgh, 45c; New York, 70c; Oil City, 40c. Washington—McKinney, No. 2, on Montgomery, dry in Gordon sand. Willets, (Munce) No. 7, drilling in good sand and made 168 barrels last twelve hours. Cannonsburg well through the sand with small showing for a successful oil well. Westinghouse well, Gilmore farm, Shannopin, showing for 50 barrels. Two dry holes for the Butler field; Phillips Bros., at Reibold Station, and Thorn Creek Oil Company, on the Welsh farm. Bradford beats Olean at base ball; score 24 to 9. City fire steamer sat to work pumping water from Shaw brook into the Marilla creek reservoir, on account of the low state of water in the creeks.

July 9.—Market opened at 65¼c, advanced to 65½c, fell off to 65c, and at 2 o'clock 65¼c was bid. Rumors from Cannonsburg well caused a break to 64¾c, reacted slightly, closing at 64⅞c. Willets, (Munce) No. 2, shot and improved to 25 barrels an hour. Cameron 2, still drilling, made 30 barrels last forty-eight hours. Washington field gauges 6024 barrels. Munce 7 in good sand and made 340 barrels last twenty-four hours. Fred Felis, of Buffalo, killed near Foster Brook, by the explosion of a nitro-glycerine can, of which he was melting off the top, ignorant of its dangerous character.

July 10.—Market very quiet; opened at 64⅞c and closed at same figure; highest point of the day 65¼c and lowest 64⅝c. Washington gauge 6747 barrels from 39 wells.

July 11.—Sunday.

July 12.—Market opened at 65c and advanced gradually to 65⅝c. About 1:30 it again advanced, with Marlin buying, to 65⅞c, fell off to 65⅝c, rallied to 66¼c, broke to 65¼c, and again advanced, closing at 66⅛c bid. Washington—Smith, No. 3, made 539 barrels in last twenty-four hours, and by deeper drilling was increased to 50 barrels an hour. Cameron 1, 739 barrels; Munce 1, 748; Munce, No. 2, doing 15 to 18 barrels an hour. Kane production reported at 4956 barrels from 192 wells. Tank at Hoodoo wells struck by lightning and 1200 barrels oil destroyed. National Transit Company had almost completed a pipe line to the wells. Corner-stone of the new Christ Church edifice laid at Oil City. Bradford defeats the Buffalo Clippers; score 5 to 1.

July 13.—Market devoid of interest; opened at 66¼c, broke to 65¾c and rallied to 66¼c. It then weakened to 65⅝c, advanced to 66⅛c and closed at 66c bid. Washington field gauges 6852 barrels. Smith 3, 784; Cameron 1, 700; Barre, No. 1, 385; No. 2, 430; Manifold, 300; Munce, No. 1, 384; No. 2, 450; No. 3, 460; No. 4, 120; No. 5, 454; No. 7, 657; Clark, No. 2, 459; Hall, No. 2, 365; Taylor, 602; Smith 1, 106. Cameron 2, drilled through sand, last twenty-four hours' production 45 barrels. Hess, No. 2, and Smith, No. 1, shot. Hukill well, on McGowan, reaches Gordon sand and is mystified.

Byrom's saw mill, at Byrom, on the P. & W. R. R., in Forest county, destroyed by lightning. Grand Valley production 1400 barrels from 123 producing wells.

July 14.—Market without special features; opened at 66c, wsakened to 65⅞c, rallied to 66¼c and broke, closing at 65½c. Washington field gauges 7150 barrels. Cameron, No. 1, 714; No. 2, 80; Smith, No. 1, (old Dyer well) shot yesterday, made 397 barrels first twelve hours; No. 3, 459; Taylor 1, 722. Associated Producers' well, on the Zelt farm, is filled up 1000 feet with oil from the "fifty-foot." Central Petroleum Company's test well, on 5156, Forest county, down 2000 feet with no oil. Break in Southwest Pennsylvania Pipe Line, near Walker's Mills, Allegheny county, causes loss of 1500 barrels of oil. Gas from Baden Gas Company's well, on Bryan farm, about one mile from Baden, in Butler county, ignited from boiler and exploded. John Reiner and William Goodrich fatally burned. Explosion of natural gas in front of Hotel Anderson, Pittsburgh, seriously injures several persons.

July 15.—Market enjoys a little rally over reports that Cameron 2 was small; opened at 65⅝c, weakened to 65½c, rallied and closed at 66½c bid. Washington—Cameron 2, shot and made 30 barrels first six hours. McKinney, No. 2, on Montgomery, shot with no improvement. Is a total failure. Thayer, No. 3, on Clark, drilling in "fifty-foot" with small showing of oil and gas. J. M. Guffey well, on J. B. Miller farm, through sand and dry. Willets, No. 7, gauges 535 barrels. Cameron 1, 757; No 2, 52; Smith, No. 1, 571; Willets, No. 7, 535. Connor Bros. deepen an old well on the Beal's farm, near Edenburg, and get a 50 barrel producer from the fourth sand. Ground broken for pavement on Main street, Bradford.

July 16.—Market opened strong at 66¾c and advanced to 67¼c. Towards the close broke to 65⅞c, which was final price of the day. Carrying rates 50 to 60c. Washington—The Curry lot well makes 80 barrels first twenty-four hours; Clark, No. 3, filling up rapidly from "fifty-foot" sand; A. P. Co.'s well, on the Zelt, drilling in "fifty-foot" with small showing; Cameron 2, made 93 barrels last twenty-four hours; No. 1, 688; Smith, No. 1, 421; No. 3, 331; Willets, No. 7, 535. Rev. A. Weills, of South Strabane, aged 81 years, killed by a B. & O. train, on the railroad, east of Washington. Bradford C Company starts for encampment at Warren. Tenth Regiment encamps at Washington.

July 17.—Market opened strong at 66⅛c, with sales at 66¼c. Values weakened to 65⅞c, but at 11 a. m. 66c was the bidding quotation. It broke to 65¾c, rallied to 66⅜c and closed at 66c. Washington—Cameron 1, 714 barrels; No. 2, 80; Smith, No. 1, 408; Curry lot well made 48 barrels in twelve hours; Clark 1, 60; No. 2, 412. Production of field 6604 barrels from 41 wells. Lone Pine wildcat abandoned at a depth of 2700 feet. Galligan well, on Taylor, 50 feet in sand and doing 20 barrels a day. John McKeown's No. 2, on W. J. Munce farm, drilling in Gantz sand and showing lots of gas. Willets, No. 7, Munce, fifty feet in the sand and doing 500 barrels a day.

July 18.—Sunday. Great day for excursions at Bradford. Erie Railroad cuts rate to Niagara Falls to 25 cents.

July 19.—Market opened at 66¼c, the lowest point, rose to 66¾c and closed at 66⅜c. Carrying rates 50 to 60c. . News from Washington regarded as bullish. Curry lot well gauges 48 barrels. Cameron 1, 647; Smith 1, 298; No. 3, 328; Munce, (Willets) No. 1, 364; No. 2, 176; No. 3, 447; No. 4, 120; No. 5, 110; No. 7, 532; Taylor, 600; Clark 2, 400; Barre 1, 400; No. 2, 445. Sixty-six wells said to have been drilled in Lima field to date, of which nine are dry. Estimated production 1761 barrels. A four-year-old son of Martin Tanner, at Warren, falls in a barrel of water and is drowned. L. Connell falls thirty feet from the top of a N. T. Co's telegraph pole at Oil City, and receives serious, but not fatal injuries.

July 20.—Market opened at 66½c, advanced to 66⅞c and broke to 66⅝c. Afterwards it advanced to 67½c, receded to 67¼c, rushed up to 68c and closed at 67⅞c bid. Carrying rates—New York, 60 to 70c; Bradford, Oil City and Pittsburgh, 50 and 55c. Washington—McKeown, No. 2, begins spraying oil; Cameron 1 gauge, 686; No. 2, 72; Willets 7, 508 barrels. Morse & Collin's No. 4, Weed lands, Kinzua Village, makes 250 barrels the first twenty-four hours. Tame slugging match at Bradford Opera House, between Prof. Layton and Geo. LeBlanche, the "Marine," for an alleged $500 a side.

July 21.—McKeown, No. 2, on the W. J. Munce farm, Washington, reported at 90 barrels an hour, and market opens with everybody eager to sell. First sales at 66¾c. It rallied to 66⅞c and broke to 66c, then to 65¾c, closing at that figure. Washington—McKeown, No. 2, on W. J. Munce farm, forty-one feet in sand and flowing at 2000 barrel rate; Willets 7, on Munce, reached lower pay streak last night, and this morning was making 60 barrels an hour. Raccoon, No. 1, on McCartney farm, Shannopin makes 130 barrels first twenty-four hours.

July 22.—Market opened at 65½c, advanced to 65⅞c and fell back to 65½c. At 2 p. m. it advanced to 66⅛c, sold down to 65⅝c and closed at 66c. Washington—McKeown 2, off to 45 barrels an hour; Willets 7, on Munce, made 1400 barrels in twenty-four hours, and doing 60 barrels an hour in the evening; Willets, No. 1, shot with considerable improvement; Curry, No. 1, gauges 96 barrels; Smith, No. 1, 243. An unknown suicide found in the Sage Run woods, near Oil City. Had evidently been dead for several weeks. Thought to be Adam Stocker, of Canton, O.

July 23.—Market very dull; opened at 66¼c, rose to 66⅜c and closed at 66⅛c. Washington—McKeown, No. 2, making 30 barrels an hour in evening; gauge for twenty-four hours 927 barrels; Willets 7, 1226; Cameron, No. 2, 111; Smith, No. 1, 229. Well of Craig, Cappeau & Griffith, at Moundsville, W. Va., reported showing oil at a depth of 2000 feet. Governor Pattison inspects the Sixteenth Regiment at Warren.

July 24.—Market opened at 65¾c, advanced to 66⅝c and closed firm at 66⅜c. Carrying rates 50 to 60c. Washington gauge 8081 barrels from 41 wells; McKeown 2, agitated and brought up to 43 barrels an hour; McKeown 2, 1032, Willets 7, 1111; Smith, No. 1, 221; No. 3, 408; Cameron 1, 663; No. 2, 119. John E. Thompson shoots John Yohe, bar-tender of the Brewer House, at Mt. Jewett, in McKean county, without provocation. Yohe died in thirty minutes.

July 25.—Sunday. Washington—Shirls, No. 2, flowing at a 50 barrel rate from the stray sand.

July 26.—Market very quiet; opened at 66¼c and ranged between 66c and 66⅜c, and closed at 66c. Carrying rates—Bradford and New York, 55c; Oil City and Pittsburgh, 50c. Washington—McKeown, No. 2, 926 barrels last twenty-four hours; Willets 7, gets another pay streak and its production raised from 1100 barrels a day to 60 barrels an hour. Wheeling Oil Company's well, on the fair grounds, makes a small flow from the stray sand. Hess, No. 2, struck by lightning and burned with one 1200-barrel tank, two 600-barrel tanks and 600

barrels of oil. Tanks at Hood, No. 2, Shannopin, likewise destroyed by lightning. Terrible storm of wind and rain creates havoc in Pittsburgh and about the city. Craig & Cappeau's venture, near Moundsville, W. Va., reported showing for a good well. Residence of W. H. H. Riddle, at Butler, struck by lightning. No serious damages. The editor of the Millerstown *Herald* receives a public horsewhipping at the hands of W. C. T. U. ladies, of that place, for an article in his paper reflecting upon a party of temperance picnickers.

July 27.—Market opened weak at 66c and fell off to 65c. At noon a rally began that carried prices to 66⅝c. Towards the close it broke to 65¾c bid. Washington—Barre 1, shot and increased from 350 barrels a day to 30 barrels an hour. McMannis well, at Taylorstown, run two bits and made a five minute flow.

July 28.—Market tame; opened at 65⅞c, highest 66c, closed at 65⅜c, lowest point of the day. Carrying rates—Oil City, Pittsburgh and Bradford, 50 to 55c; New York, 70c. Washington—Union, No. 4, on Taylor, taps first pay streak and begins filling up with oil; McKeown 2, gauges 760 and Willets 7, 1192 barrels. Taylorstown well, the source of many conflicting reports, and continues to exercise a strong bearish influence. Excelsior Pipe Line begins laying a three-inch line from Tarkill to Oil City.

July 29.—Market opened at 65½c, the lowest point, advanced to 66¼c and closed at 65¾c. Washington—Union, No. 4, Taylor, 20 feet in sand and made 100 barrels first eighteen hours; Cameron 2, pumped 119 barrels last twenty-four hours; Willets 7 gauges 1052 and McKeown 2, 720 barrels. Taylorstown well run four bits and is thought to be doing 25 barrels a day. Storm of wind and rain in various sections of the oil country. Eight or ten tanks in the Tiona field destroyed by lightning. Three wells of the Associated Producers' Company, at Simpson, in the Bradford field, struck by lightning. The rigs, six 250-barrel tanks and 700 barrels of oil destroyed. May, Kelley & Co., at Balltown, had two tanks of oil destroyed in the same manner.

July 30.—Market opened at 66c, and at 1 p. m. advanced to 66⅜c, afterwards declined and closed at 65⅞c bid. Washington—Union 4, on Taylor, made 250 barrels last twenty-four hours; Willets 7, 1200; Cameron 1, 632; Barre 1, 558; McKeown 2, 650. Field gauges, 7502 barrels. Taylorstown well through the sand and proves a small producer. Three dry holes reported at Tarkill, Venango county, north and east of developments. Tank No. 11, of the Macksburg Pipe Line, of 25,000 barrels capacity, struck by lightning and destroyed.

July 31.—Market opened at 66¼c, which proved the highest point of the day. Closed at lowest point 65¾c. Washington gauge 7740 barrels from 44 wells; Cameron 1, 671; No. 2, 123; Willets 7, 1212; McKeown 2, 612. Sixteen wells in the Shannopin or Shoustown field with a reported production of 1065 barrels per day. M. A. Haggerty's hardware store, at Tarport, burned.

THE total exports of petroleum from America, in gallons, according to a German circular, from January 1 to July 9, have been as follows:

	1886.	1885.
To Europe	185,812,333	189,553,310
To East Indies, etc	83,023,513	63,508,092
Total	268,835,846	253,061,402

POCKET maps of Warren county on sale at AGE office.

The Macksburg Field in July.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2186
April	64,137	7890	2401
May	58,596	6680	2104
June	65,379	2871	2275
July	58,410	4080	2016

There were completed in the Macksburg field during July 11 deep and 1 shallow wells, with a new production of 217 barrels. No wells were completed outside of the defined limits of the field. The production shows a decrease of 259 barrels a day from the June figures; while June increased 171 barrels a day over the May yield. The number of producing wells on the first of August is 439, and the average production about 4.6 barrels apiece. On the last day of the month there were 10 wells drilling and 11 rigs up and building in this field. There are five experimental wells under way which are now due, two south of Elba, the Farmer's or Wicken's well, on Buell's run, and R. F. Borckman's venture, on the Wagner farm; one four miles west of Macksburg, that of "Gentleman" John Taylor, near Keithstown; one at Cambridge, Guernsey county, and the fifth, the Stafford Oil Company's well, on the Robinson farm, ten miles northeast of Macksburg, which proved a failure in the stray sand and is being deepened to the regular formation.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111¼	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅝	69⅞
June	68⅜	100¼	81	54½	117¼	68¾	82¼	67
July	69⅞	101¼	76⅛	57⅝	108	63½	96⅝	66
August	67¼	90¾	78⅜	58⅜	108⅜	81 1-5	100⅜	-----
September	69¼	95½	92¼	71⅛	112½	78	100¾	-----
October	88⅛	96¾	92¾	93⅝	111⅛	71	105½	-----
November	105⅜	91¼	82⅛	114¾	114 4-5	72½	104⅜	-----
December	113¼	92⅜	83¾	95½	114⅛	74⅜	89⅝	-----

THE Chattanooga Natural Gas and Heating Company has been incorporated by James Baylor Lewis, H. Wheeler, W. S. Marshall and O. H. Pennock, at Chattanooga, to bore for natural gas, erect gas works, etc. The company has leased 15,000 acres of land.

OPPERMAN'S Middle Field pocket maps for sale at AGE office.

Recent Oil and Gas Incorporations.

The Belle Centre Oil and Gas Company, of Belle Centre, O., has been incorporated. Messrs. Wm. Ramsey, E. H. Mains, H. M. Cline, A. P. Wylie, T. F. Bushey and J. H. Clark are corporators.

The Tyler County Oil and Gas Company, of Middlebourne, W. Va., has been incorporated. Incorporators Wm. M. Rowell, W. E. Stathers, H. A. Rymer, E. Eagle and W. J. Breman.

The New Bethlehem Light and Heat Company, of New Bethlehem, Pa. Capital stock, $50,000. M. F. Flaherty, New Bethlehem, Pa., Treasurer.

The Cumberland Natural Gas and Petroleum Company, of Nashville, Tenn., has been incorporated. W. M. Cassety, J. H. Eakin, W. C. Collier, C. R. Handley, W. M. Drake are the incorporators.

The Webster City Natural Gas and Coal Company, of Webster City, Ia., has been incorporated, with a capital of $100,000. J. L. Kamrar is President.

The Pine Run Gas Company, of Pittsburgh, has been incorporated, with a capital stock of $200,000. Mr. George P. Hukill, of Oil City, is the Treasurer of the company.

The Marshall Oil Company, of Pittsburgh, with a capital stock of $100,000, was granted a charter on July 7th.

The Niles Gas Company, Niles, O. Capital stock, $3,000. Myron I. Arms and others, incorporators. Have contracted to drill a test well.

The Quaker City Oil Company, Philadelphia, Pa. Capital stock, $100,000. Treasurer, John Gill, Jr., 1321 North Fifteenth street.

The Buckeye Oil Company, Lima, O. Capital stock, $200,000. C. T. Brice, R. Mahaffey and others, incorporators.

The Keystone Natural Gas Company, Parker City, Pa. (P. O., Parker's Landing.) Capital stock, $10,000. Treasurer, W. W S. Giphart.

The Mad River Natural Gas and Oil Company, Urbana, O. Capital stock, $25,000. John S. Kirly and others, incorporators.

The Southern Natural Gas Company, of Washington county, Pa., has been incorporated at Harrisburg, with a capital stock rated at $100,000. The company is mainly backed by Captain Vandergrift and the people composing the West Virginia Natural Gas Company, and is really the Pennsylvania end of that corporation. Treasurer, J. W. Thorne, Pittsburgh.

The American Fuel Company, Cleveland, O. Capital stock, $300,000. Oscar Townsend and others, incorporators.

The Westmoreland and Cambria Natural Gas Company, Pittsburgh, Pa. Capital stock, $250,000. Treasurer, Andrew W. Mellon, Pittsburgh.

The West Virginia Gas, Oil and Gas Coal Company, has been incorporated at Mannington, with a capital stock of $1,000,000.

The United Natural Gas Company, of Oil City, Pa. Capital stock, $2,500,000. Treasurer, George W. Colton, 26 Broadway, N. Y.

The Huntingdon Light and heat Company, Huntingdon, Pa. Capital stock, $10,000. Treasurer, Sewell H. Stewart.

The Ohio Gas Fuel Company, Youngstown, Ohio. Capital stock, $100,000. Caleb B. Wick and others, incorporators.

The Palmer Oil and Gas Company, Bairdstown, Ohio. Capital stock, $20,000. Melvin B. Palmer and others, incorporators.

The Greensburg Fuel Company, of Greensburg, Pa., has been incorporated. John Zimmerman is Treasurer, and J. M. McWilliams is Attorney for the company. The capital of the company is $40,000.

The Louisville Natural Gas and Heating Company has been incorporated at Louisville, Ky., to develop and utilize petroleum and natural gas. The capital stock is to be $1,500,000.

The Pennsylvania Natural Gas Company, Philadelphia, Pa. Capital stock, $500,000. Treasurer, Frank B. Christman.

The Chagrin Falls Gas, Mineral, Oil and Fuel Company, of Chagrin Falls, O. Capital stock, $5000. George Penhale and others, incorporators.

The Wheeling Oil Company, Wheeling, W. Va., has been incorporated with $500,000 capital stock to bore for oil and natural gas.

A charter has been granted to the Surburban Gas Company, capital $100,000, to produce gas in Scott and Chartiers townships.

The Mahoning Gas Fuel Company, Youngstown, O. Capital stock, $300,000. George M. McKelsey and others, incorporators.

A charter has been issued to the Western Pennsylvania Natural Gas Company, of Pittsburgh, which proposes to drill for gas in Washington and Greene counties. This company is composed of J. M. Guffy, R. C. Elliott, T. H. Given, L. H. Williams and William Flinn.

Another addition to the numerous companies engaged in the natural gas business in the vicinity of Pittsburgh has been organized with a capital stock of $250,000. The new corporation has filed its application for a charter, and will be known as the Chicopee Natural Gas Company, and will operate in Allegheny, Westmoreland and Washington counties. Treasurer, Wm. J. Brown.

The United States Gas Fuel Company, Pittsburgh, Pa. Capital stock, $10,000. Treasurer, Walter S. Mitchell, Allegheny.

The Carnegie Natural Gas Company, capital stock $300,000, has been chartered to produce gas in Franklin, Pa., and North Huntingdon, Westmoreland county, and Patton and North Versailles, Allegheny, and to furnish it to citizens and manufacturing establishments along the main line and branches.

The Keystone Natural Gas Company, of Pittsburgh, has been chartered with a capital of $300,000, to furnish natural gas to mills.

The Mahoning Gas Company, New Castle, Pa. Capital stock, $250,000. Paul Wick, Youngstown, Ohio, Treasurer; John H. Clark, Youngstown, O., Attorney.

The Twin Creeks Oil Company, of Wyoming Territory, has been incorporated with a capital stock of $100,000, 10,000 shares, to prospect for oil in this Territory. The principal office will be at Cheyenne.

A company has been organized at Iola, Ks., with a capital of $50,000. for the purpose of prospecting for natural gas. W. H. McClure, R. B. Stevenson and T. S. Stover are interested.

The Iowa Natural Gas and Manufacturing Company has been incorporoted, with headquarters at Des Moines. Capital stock, $25,000. The intention is to prospect for natural gas, with the expectation of its utilization, if found, for manufacturing purposes. J. S. Clarkson is President and W. L. Alexander, Secretary and Treasurer.

The Great Northwestern Oil Company, of Dakota, has been organized at Lead City, with a capital stock of $2,500,000; shares, $5 each. It will work and develop 1380 acres of oil lands in the vicinity of Wyoming, Standard Oil Company property.

JULY OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN JULY, 1886.

Allegany Field.

Twp.	Owner.	Barrels.
Alma, 3,	Bellamy & Taylor	4
" 37,	(Randall) E F Willetts No 4	5
" 37,	Perrin & Young	6
" 81,	Shirley & Hochstetter No 5	2
" 86,	" No 12	5
Wirt, 34,	(Johnson) Nile Oil Co	4
" 55,	(R Mulkins) Wirt Pet Co No 5	5
" 52,	(Burdick) Wilson Bros & Ackerly No 14	10
" 52,	(Jacob Jordan) Wilson & Johnson No 7	10
" 59,	(Carnahan) Dow & Barnsdall No 2	3
" 61,	(Deyoe) Nat Tran Co No 75	gas
" 61,	(Goodell) C Phillips No 2	10
" 62,	(Peterson) Barton, Hammond & O'Neill No 3	8
Bolivar, 6,	Rogers & Co	4
Clarksville, 3,	(Alvah Jordan) A B Cottrell & Co No 3	5
" 3,	(M Jordan) M Jordan No 1	4
" 3,	(A Jordan) Angell Oil Co No 1	4
" 10,	(Swartwout) Angell Oil Co No 13	6
" 5,	(Wetherby) Steele & Werthman No 3	8
" 5,	" Harris, Johnson & Co No 8	15
" 5,	" " No 9	15
" 5,	(Jordan) Cuba Gas Co	gas
" 10,	Davidson & Co No 7	5
" 10,	Whipple & Davis	5
" 28,	(Butts) Love & Patterson No 15	5

Wells completed 25
Production 148
Dry 2

Bradford Field.

East and West Branches.

Dent, P C L & P Co No 68	8
" Whitney & Wheeler No 45	8
Bingham, lot 151, Union Oil Co No 21	10
King, Carman & Co No 1	4
Wagner, C K Book No 5	4
" W C Patterson & Co No 5	5
Willis, McCray Bros	5
Island, James Murty	5
Quintuple, 220, Clark, Stearns & Co No 13	6

Kendall Creek.

Melvin, P C L & P Co No 88	6

Knapp's Creek.

Borden, J Stettheimer No 5	6

Foster Brook.

E T Co, E T Co No 51	8
C B & H, Hackett & Hutchinson No 3	5
" Watson Oil Co No 45	5
Willets, Oliver & Skinner	5

Indian Creek.

Weston, J L McKinney & Co No 9	10
" Murphy, Hogan & Williams No 10	10
" Ernst, Perrin & Ramsey No 5	10
Shattuck, Bussell & Johnson No 3	10
" " No 4	10
" Whitney & Black No 2	8
" Wm M Brown No 2	8
Barrett, Page & Van Campen No 2	8

Cole Creek.

Bing'm, lot 498, Union Oil Co	5
" 539, C P Byron No 11	10
" 590, Ass Producers Co No 60	20

Miscellaneous.

Warrant 3076, Union Oil Co No 64	20
" 2243, Emery Oil Co No 49	20
Sugar Run, Geo Leonhart & Co	dry

Wells completed 29
Production 229
Dry 1

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 4	120
Richardson, J E Fogel & Co	dry

Warren, etc.

444, (Pleasant twp) E H Barnum	dry
Koberger, Brown Bros	dry
Sill, Magee & King	dry
Hemlock, (Harmon) Union Oil Co	10

Wells completed 6
Production 130
Dry 4

Clarendon.

55, O W Beatty & Bro No 47	6
77, Wilson & Brenneman No 7	6
80, D J Thayer No 15	5
464, Howard Thompson No 2	4
464, Columbia Oil Co No 22	6
496, Paul Kratzer No 9	6
495, Conley Bros No 7	5
107, W B Roberts & Son No 19	5
527, F H Rockwell & Co No 24	5
531, S Short & Son No 4	6
531, " No 5	5
531, Keegan, Sage & Co No 3	6
558, Goal & Haskell	6
Herzell, Jacob Morris	1

Wells completed 14
Production 72
Dry 0

Tiona.

86, Fertig, McKinney & Co No 7	6
85, " No 8	5
109, J R Kuhn & Co No 10	6
160, Col D Gardner No 9	5
201, Wesley Chambers No 12	6
202, Mandell Oil Co No 14	5
242, Anchor Oil Co No 4	3
244, Horton, Crary & Co No 12	8
244, " No 17	8
244, " No 18	6
244, " No 19	7
245, Shoelkopf, Horton & Co No 9	6
284, Anchor Oil Co No 10	8
284, " No 12	8
284, Hackett & Shirley No 5	3
321, Horton, Crary & Co No 2	8
321, Pickett & Stone No 3	8
321, " No 4	8
285, Henderson, Spence & Richards	dry

Wells completed 19
Production 114
Dry 1

Balltown.

3195, M K McMullin	2
5214, Anchor Oil Co No 4	10
5214, " No 5	8
5215, May, Kelley & Grandin No 55	20
5215, " No 56	50

Wells completed 5
Production 90
Dry 0

Kane.

380, Boyer, Caldwell & Co No 3	50
380, " No 4	50
380, " No 5	50
380, " No 7	40
381, Boston Oil Co No 1	30
381, " No 2	20
384, Shirley, Hochstetter & Co No 3	40
384, " No 4	40
384, (Donaldson) " No 1	40
384, " " No 2	40
384, (F W Andrews & Co) S H & Co No 5	20
385, Kane Oil Co No 32	30
385, " No 33	30
385, " No 34	35
385, Smith, Newell & Co No 3	40
385, " No 4	30
385, " No 8	30
385, Howe, Lavens & Co No 6	40
385, " No 8	35
385, " No 9	35
385, " No 10	30
385, John Forest & Co No 1	50
385, " No 2	40
385, " No 3	40
386, W P Weston & Co No 2	20
386, " No 3	20
419, The Union Oil Co No 8	dry
419, " No 9	25
419, " No 10	50
419, " No 11	20
420, Coast & Sons No 11	20
420, " No 15	25
420, " No 18	30
420, " No 22	25
420, " No 23	25
420, " No 29	10
420, " No 33	25
420, " No 34	20
420, " No 35	20
421, (Mallory & Co) (S H & Co) No 8	20
421, " " No 9	25
421, " " No 10	20
421, (King) Shirley, Hochstetter & Co No 2	40
421, (King) Shirley, Hochstetter & Co No 3	40
421, " " No 4	25
421, P T & W C Kennedy No 5	20
424, Fertig & Co No 2 est	15
425, Union Oil Co No 25	25
425, " No 26	25
426, Kane Oil Co No 17	15
426, " No 36	50
426, " No 40	100
3767, Craig & Cappeau No 17	50
3767, " No 19	40
3767, " No 23	30
3767, " No 32	50
3767, Ass'd Producers, Craig & Cappeau No 8	30
3767, Roy & Archer No 4	20
3775, (lot 12) John T Griffith No 6	30
3775, " No 8	15
3775, P T & W C Kennedy No 7	15
3775, " No 10	15

Wells completed 62
Production 1935
Dry 1

Grand Valley.

Campbell, L B Wood & Co No 11	10
" " No 12	15
Hunter, " No 3	10
" " No 4	12
" " No 5	12
Gibbs, " No 2	10
186, W B Benedict & Co No 7	5
196, " No 4	15
Merritt, Miller & Crippens No 7	12
" " No 8	20
" " No 11	12
Blakeslee, " No 3	15
" " No 4	15
235, (Phil tract) Crippens & Phillips No 1	8
186, Holman & Hopkins No 6	10
186, " No 7	10
197, Tew Bros & Co No 4	3
197, " No 5	6
197, " No 6	10
Nason, D Emery & Boyer No 3	10
" " No 4	10
" " No 5	10
186, (Goodell) Fertig & Henne No 1	10
186, " " No 3	12
186, " " No 4	12
186, " " No 5	10
187, (Zane) Fertig & Wood No 8	15
167 " " No 9	15
196, Groves & Sons No 5	8
196, H P Boyd & Co No 5	10
196, Jos Millison No 6	15
196, " No 7	12
196, Bovee & Duck No 5	20
196, " No 6	10
195, (Emerson) W W Hague No 4	6
150, Nelson Farrell No 5	10
186, S W Stewart No 8	10
149, G P Kepler No 11	15
149, " No 12	20
197, Bell & Hazeltine No 4	8
197, " No 5	10
150 and 185, John J Carter No 4	10
150 and 185, " No 5	10
150 and 185, " No 7	12
150 and 185, " No 8	10
150 and 185, " No 9	10
150 and 185, " No 10	10
235, Mead & Beatty No 3	6
236, Jos Millison	dry
151, (Leckey) Southwest Oil Co No 3 est	10
Thomas, (Triumph twp) H Egolf	dry
Reno Oil Co, Reno Oil Co No 5	3
347, (Newton) Boiles & Roberts No 2	dry
146, Whaley & Zane	dry
322, (Carr lands) Sheeman & Wilson	dry
234, Wm Helm & Co	dry
235, Tew & Thurston	2
238, (Thomas heirs) Windsor & Roberts	2
Putnam, Wayne Oil Co No 1	6
" " No 2	8

Wells completed 80
Production 562
Dry 6

Miscellaneous.

Elk county, Ridgway Oil Co	gas
Millstone, Tarentum parties	dry
2676, National Transit Co No 10	gas
5156, Central Petroleum Co	dry

Wells completed 4
Production 0
Dry 4

Lower Country.

Venango and Other Sections.

Farm.	Operator.	Barrels.
Sage Run, Beers & Son No 2		3
Leehicton, Roess Bros		4
Hogue, Oil City Fuel Supply Co No 2		gas
Davis,	" No 1	gas
Benninghoff,	" No 5	gas
Frampton, Frampton & Turner No 14		6
Pinoak, J B Smithman		3
Mt Hope, Buchanan & Co No 2		2

Ronseville, (Curtis) Thomas Smith..... 5
Pine Grove twp, 2825, Tionesta Gas Co.. gas
Moore, I S Gibeon & Co..... 10
Frank, B F Brundred..... 3

Tarkill.

A Hill, Taylor, Torrey & Murphy No 7.. 100
" " " No 8.. 50
" " No 9.. 150
" " No 10 150
" " No 11 100
Geo Hill, " No 4.. 150
" " No 5.. 100
" " No 6.. 75
" " No 7.. 80
" " No 8.. 50
" " No 11 150
Wm Hill, " No 2.. 50
" " No 3.. 75
Benton, Benton Oil Co No 7..... 50
" " No 8..... 50
Alex Hill, Duncan & Fisher No 6..... 60
" " No 7..... 80
" " No 8..... 100
" Holt & Dorrington No 3..... 50
" " No 4..... 60
" P H Judd & Co No 2..... 100
Wm Hill, Fisher & Hill No 2..... 75
" " No 3..... 75
" " No 4..... 50
" " No 5..... 75
" " No 6..... 100
Wm Hill, Holt & Dorrington No 3..... 100
" " No 4..... 100
" Boyd & Kane No 1..... 100
" " No 2..... 80
" Hasson & Cornwall No 1..... 60
" " No 2..... 80
" Phinney & Bishop No 2..... 35
Sam Hill, Shaffer & Marks No 1..... 60
" " No 2..... 60
" Deitrich & Co No 1..... 75
Honser, A P Dale & Co No 2..... 5
Judge McCalmont, Canning & Goettel No 3..... 75
" " No 4..... 100
" " No 5..... 100
Huff, Clark & Foster No 3..... 50
" " No 4..... 20
Thompson, John Galey & Co..... dry
W Huff, Duncan & Co..... dry

Rockland or Red Valley.

J Jolly, Dale Bros..... 12
Batten, Bowen & Co No 3..... dry

Bullion.

Crawford, Hoffman & Co..... 6
Shorts, Giles & Smyth..... dry

Nickleville.

J Davis, James Downing..... dry
Dan Levere, John H Lee..... gas
Stevenson, P H Judd & Co No 2..... 3
Bly, W H H Piper No 1..... dry

Vicinity Emlenton.

Jamieson, Barnes & Co..... 3
Seizel tract, Fink & Johnson..... 6

Wells completed..... 66
Production..... 3366
Dry..... 11

Clarion.

Rickenbrode, John J Carter No 9..... 5
" " No 10..... 10
Beals, Beals, Hunter & Co No 10..... 4
Hess, L Oil Co..... 15
Leslie, Buzzard..... dry
Cotherman, Cotherman Oil Co No 4 est.. 5
Strutman, Crawford & Brothers..... 10
Stumpner, Deitrich & Co..... 15
Shreffler, McCollum & Co..... 8
Black, Robert Nicholson..... 4
Dougherty, Dubois Oil Co..... dry
Lockhart, White, Crawford & McDowell No 2..... 15
Booth, Moyer & Co..... 10
Baker, Deer Creek Oil Co..... 5
Allaman, John Allaman & Co..... 20

Wells completed..... 15
Production..... 126
Dry..... 2

Butler and Armstrong.

Titley, Titley Bros No 8..... 40
Dulity, Ireland & Hughes No 6..... 75
" McCafferty & Randall No 2..... 15
" Greenlee & Russell No 1..... 15
" Greenlee & Sample No 3..... 15
" " No 4..... 20
Miller, Dennison & Fleegler No 2..... 80
Glenn, W P Turner & Co No 2..... 20
Frederick, Jacob Frederick Oil Co No 3.. 30
Black, Father Quilter..... 10
" Campbell & Murphy No 2..... 15
Glenn, G F Fetzer & Co No 6..... 60
" Hite & Larkin No 1..... 20
Murtland, Troutman Oil Co No 2..... 50
Church lot, Showalter Bros & Hartman.. 15
Barnhart, Reep & Sutton No 2..... 100
" " No 3..... 100
Jenny Boyle, Showalter Bros & Hartman dry
Barnhart, Vensel, Larkin & Co..... 40
Leighthold, Hunter & Cummings No 3.. 5
Walker, Frazier & Co..... dry
Perisol, Phillips Bros No 3..... dry
Wright heirs, Phillips Bros No 1..... dry
Fred Dambaugh, Connors, Fishel & Co.. 5
Weber, Rigney & Co..... 7
Lloyd, Jenkins..... 20
Reeves, Shenango Natural Gas Co..... dry
Downey, Downey & McTamany..... dry

St. Joe.

Clouse, Phillips Bros No 5..... 5
Widow Witt, McGuire & Co..... 30

Thorn Creek.

Chas Morrison, Clark & McKinney No 1.. 50
Welch, Thorn Oil Co No 9..... dry
Maharg, Shetler, McKelvey & Co No 2.. 20

Wells completed..... 33
Production..... 862
Dry..... 7

Shoustown, Etc.

Neville Island, Geo H Dimick & Co..... dry
Mt Nebo, (Cook farm) Union Oil Co..... dry
Economy, Barton & Ackerly..... 5
Oliver, Shannopin Oil Co..... dry
Robert McCartney, Raccoon Oil Co No 2 80
Charles Eachel, " No 3 75
A P Morrow, " No 1 40
Gilmore, Philadelphia Co No 2..... 120
Langfitt, Ditworth & Co..... dry
Dan Bruce, Munhall & Co..... dry

Wells completed..... 10
Production..... 320
Dry..... 5

Washington.

Mrs Curry, Vandergrifts & Co No 1..... 95
Cameron, Willets, Young, Craig & Co No 2..... 120
Munce heirs, Willets & Son No 2..... 80
" " No 7..... 1200
W J Munce, John McKeown No 2..... 600
Montgomery, McKinney & Co & Robbins dry
J B Miller, United Gas Fuel Co..... dry
Connors, Manufacturers' Gas Co..... 5
Taylor, Galligan & Young..... 60
Connors, Manufacturers' Gas Co..... 5

Wells completed..... 10
Production..... 2165
Dry..... 2

DRILLING WELLS.

RIGS UP AND BUILDING JULY 31, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
1,	Pickering & Smith	drilling
3,	Coyle & Simon (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old)	rig

New rigs..... 0
Old rigs..... 4
Drilling..... 1

Total..... 5

Alma.

3,	M J McMullan & Co No 5 (old)	rig
23,	Vance & Horton (old)	rig
24,	W F Jones (old)	rig
26,	Willetts & Elliott (old)	rig
28,	F N Whitcomb No 2	drilling
37,	Perrin & Young (fishing)	600
38,	Koch Bros No 9 (old)	rig
51,	Sawyer & Co (old)	rig
86,	Brown & Thornton No 5	sand
88,	Duke & Co (old)	rig
108,	Shirley & Hochstetter No 2	rig
120,	McCalmont Oil Co No 10 (old)	rig
142,	Dean & Smith No 5 (old)	rig

New rigs..... 1
Old rigs..... 9
Drilling..... 3

Total..... 13

Wirt.

1,	(Riley Allen) Emp Gas & Fuel Co No 2 (old)	rig
47,	(Johnson) Tew, Wicks & Co No 2	drilling
47,	(Voorhees) Applebee & Mix No 2 (old)	rig
48,	(Church) McNorton, Deming & Co No 2	drilling
52,	(Jacob Jordan) Wilson & Johnston No 8	rig
55,	(R Mulkins) P M Shannon & Co No 2 (old)	rig
55,	(Orson Witter) " No 1 (old)	rig
55,	(S W Jordan) "	600
60,	(Alvah Jordan) J H Snow No 6 (old)	rig
61,	(Deyoe) National Tran Co No 76 (for gas)	drilling
61,	" " " No 77	rig
61,	(I Jordan) Ackerly, Barton & Co (old)	rig
61,	(Isaiah Jordan) Lester, Jordan & Co No 6 (old)	rig
61,	" " No 7 (old)	rig
62,	(Marshall) Limekiln Club No 3	50
62,	(Peterson) " No 4	rig bldg
62,	" Barton, Hammond & O'Neil No 4	50

New rigs..... 3
Old rigs and shut down..... 8
Drilling..... 6

Total..... 17

Bolivar.

12,	Wood & Co (old)	rig
23,	F C Streeter & Co No 12 (old)	rig
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig

New rigs..... 0
Old rigs..... 4
Drilling..... 0

Total..... 4

Genesee.

11,	(Little Genesee) Emp Gas & Fuel Co Limited (for gas) (old)	rig
14,	Merwin (old)	rig
22,	I Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
23,	Coughlin (old)	rig
29,	William Cranston (old)	rig

New rigs..... 0
Old rigs..... 9
Drilling..... 0

Total..... 9

Clarksville.

5,	(Lane) Lane Oil Co No 3	350
5,	" " No 4	rig bldg
5,	(Wetherly) Congdon & Werthman No 4	50
5,	" Harris, Johnson & Co No 10	rig bldg
9,	Heuston & Brecht No 4 (old)	rig
9,	Merritt (old)	rig
10,	Whipple & Davis	drilling
6,	(Seever) Ackerly, Barton & Co No 9 (old)	rig
13,	(Nixon) " No 3 (old)	rig
20	(Ernhout) " No 6 (old)	rig
20,	" " No 23 (old)	rig
20,	" " No 30	sand
28,	(Butts) Love & Patterson No 16	drilling
3,	(A Jordan) Angell Oil Co No 2	rig bldg
10,	(Swartwout) " No 16	drilling
11,	(Keller) " No 2	drilling
11,	" " No 3	rig bldg

New rigs..... 4
Old rigs..... 6
Drilling..... 7

Total..... 17

Miscellaneous.

Almont twp, Crandall & Co..... drilling

New rigs..... 0
Old rigs..... 0
Drilling..... 1

Total..... 1

Bradford Field.

East and West Branches.

Cary,	W H Duncan No 4 (old)	rig
Dent,	P C L & P Co No 69	drilling
Dent,	Whitney & Wheeler No 46	drilling
"	" No 47	rig
Warrant	2268, R J Straight No 19	drilling
"	2263, Van Vleck & Mitchell No 38	500
B O Co,	Western Oil Co No 7 (fishing)	sand
Tomes,	Matson & Thompson	rig bldg
Mack,	Columbia Oil Co (old)	rig
"	Fisher Oil Co No 19 (old)	rig
King,	W H Emery No 7	sand
Hatfield,	Wesley Chambers No 3 (old)	rig
Wagner,	W C Patterson & Co No 6	drilling
"	" No 7	rig bldg

Blair, Geo Baldwin & Co ..... drilling
Cockroft, Jas E Cochran No 3 ..... drilling
Paton, McClure & Co (old) ..... rig
Hinchey, McMurray Bros No 6 (old) rig
Clark, McCray Bros (old) ..... rig
Hooker, P Hooker & Sons ..... rig

Quintuple.

25, O H Strong (old) ..... rig
44, J W Humphrey (old) ..... rig
260, E T Howes (old) ..... rig

New rigs 4
Old rigs and shut down 10
Drilling 9
Total 23

Kendall Creek.

Fisher, Larrabee & Whedon No 9 ..... drilling
Melvin, P C L & P Co No 89 700

New rigs 0
Old rigs 0
Drilling 2
Total 2

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) rig
Borden, T P Thompson (old) ..... 3 rigs
Duke, J West No 7 (old) ..... rig
" " No 8 (old) ..... rig
" F T McEvoy No 8 ..... drilling
Applebee, S M Jones & Co No 1 ..... sand
Baker, Baldwin & Co No 2 ..... rig
Keating, Forest Oil Co No 54 (old) .. rig bldg

New rigs 1
Old rigs 7
Drilling 2
Total 10

Foster Brook.

E T Co, Kervin & Co No 10 (old) ..... rig
" E T Co No 41 (old) ..... rig
" " No 43 (old) ..... rig
" " No 52 60
C B & H, Juter & Yager (old) ..... rig
" Clark, Cooper & Co No 9 (old) ..... rig
" Roberts & Co No 15 1000
" Burns & Monroe (old) ..... rig
" Watson Oil Co No 46 ..... rig bldg
" Hackett & Hutchinson No 4 ..... drilling

New rigs 1
Old rigs 6
Drilling 3
Total 10

Four Mile.

Van Campen, Coldren & Vance (old) rig
" Jas K Van Campen No 3 (old) ..... rig
Dye, Manhattan Oil Co No 5 (old) ..... rig
Stevens, Book & Rhodes No 12 ..... rig

New rigs 1
Old rigs 3
Drilling 0
Total 4

Indian Creek.

North Branch, J D Downing & Co (old) 2 rigs
Hamlin, Miller & O'Dell No 4 (old) ..... rig
" Forest Oil Co No 40 (old) ..... rig
" " No 41 (old) ..... rig bldg
Weston, J L McKinney & Co No 10 ..... rig
" " No 11 ..... rig
" Murphy, Hogan & Williams No 11 ..... rig
" " No 12 ..... rig bldg
" Ernst, Perrin & Ramsey No 6 800
Shattuck, Bussell & Johnson No 5 .. drilling
" " No 6 ..... drilling
" " No 7 ..... rig bldg

New rigs 5
Old rigs 5
Drilling 3
Total 13

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) rig
" 2263, " No 7 (old) rig
Bingham, lot 69, Bennett & Thompson No 11 (old) ..... rig
" lot 477, Tucker & Rolfe No 3 (old) ..... rig
" lot 497, Jack, Brawley & Co No 4 1000
" lot 539, C P Byron No 12 1100
" lot 540, Jno McKeown No 1 900

Bingham, lot 592, Ass'd Producers Co No 61 ..... rig bldg

New rigs 1
Old rigs 4
Drilling 3
Total 8

Kinzua.

Warrant 3076, Union Oil Co No 66 ..... drilling
" 2243, Emery Oil Co No 50 ..... rig
Lot 129, P T & W C Kennedy No 8 2000
136, George Tait ..... rig

New rigs 2
Old rigs 0
Drilling 2
Total 4

Miscellaneous.

Sugar Run, Royal Oil Co ..... drilling
Ceres, Carter & Dodge ..... rig
Potter county, Dr Elison ..... drilling

New rigs 1
Old rigs 0
Drilling 2
Total 3

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 5 ..... drilling
Willie Run, Smith, Bright & Co ..... rig
Wilkinson, (3705) T G Phillips & Co. sand

Warren, Etc.

Willie, Beatty & Pickett (old) ..... rig
Roy, James Roy (old) ..... rig
David Loucks, Cramer & Cogswell ..... sand
Hemlock, P M Smith & Co No 3 ..... drilling
Cobham, F W Pratt ..... rig
North Warren, (Asylum lands) Sanford & Jamieson No 6 ..... rig bldg

New rigs 3
Old rigs 2
Drilling 4
Total 9

Clarendon.

35, J Smith & Son No 7 ..... rig
35, A J Thompson ..... drilling
55, O W Beatty & Bro No 48 ..... drilling
76, Armstrong ..... sand
80, (Thayer) R R Armor No 16 100
460, Waid & Co No 2 (fishing) ..... sand
463, Fred Hue No 2 (old) ..... rig
463, J B McElwaine & Co No 10 700
463, " No 11 ..... rig
464, D Riddlesperger No 5 ..... drilling
105, R I Shugert (old) ..... rig
105, Hackett & Shirley No 5 (fishing) 800
107, W B Roberts & Son No 20 ..... rig
162, Goal Bros No 3 (old) ..... rig
527, F H Rockwell & Co ..... rig
531, S Short & Son No 6 400
531, " No 7 ..... rig
531, Keegan, Sage & Co No 4 1000
531, " No 5 ..... rig
558, Goal Bros ..... drilling
558, Goss, Goal & Haskell No 9 (old) rig
558, " No 10 (old) rig

New rigs 6
Old rigs 5
Drilling 11
Total 22

Tiona.

83, Fertig, McKinney & Co No 2 (old) rig
83, " No 3 (old) rig
83, " No 4 200
83, " No 5 (old) rig
109, O'Donnell & Hill ..... drilling
200, Bovee & Duck No 10 (old) ..... rig
201, Wesley Chambers No 13 ..... drilling
202, Mandell Oil Co No 15 ..... drilling
240, W W Winger No 5 (old) ..... rig
243, Booth Bros No 1 ..... rig bldg
240, H B Beatty & Co No 19 300
244, Horton, Crary & Co No 13 ..... rig
244, " No 20 ..... drilling
244, " No 21 ..... rig
244, " ..... rig
281, (Ford) L Kraeer & Co No 7 ..... drilling
281, " " No 8 ..... rig
284, Anchor Oil Co No 11 ..... drilling
284, " No 13 ..... rig
320, James Goff No 1 ..... rig
321, Horton, Crary & Co No 3 ..... drilling
321, " No 4 ..... rig
320, Windsor & Roberts No 2 (old) rig
321, Pickett & Stone No 5 400

324, W W Winger No 1 200

New rigs 8
Old rigs 6
Drilling 11
Total 25

Cooper District.

407, Shank & Stewart No 9 (old) ..... rig
407 " No 13 (old) ..... rig

New rigs 0
Old rigs 2
Drilling 0
Total 2

Balltown.

3194, Porcupine Oil Co No 39 (old) ..... rig
3195, (Crisman) N F Clark No 14 (old) rig
3195, " " No 21 ..... rig
3195, Stone, " No 8 ..... drilling
5214, James Welsh No 6 ..... drilling
5214, James Welsh No 7 ..... drilling
5215, May, Kelley & Grandin No 57 .. sand

New rigs 1
Old rigs 2
Drilling 4
Total 7

Kane.

344, Treat & Mallory No 1 ..... sand
344, " No 2 ..... rig
345, Clinton & Swayne No 2 ..... drilling
380, Boyer, Caldwell & Co No 6 ..... drilling
380, " No 8 ..... drilling
380, " No 9 ..... drilling
380, " No 10 ..... rig
381, Boston Oil Co No 2 ..... sand
381, " No 4 2000
381, " No 5 300
381, " No 6 500
381, " No 7 200
381, " No 8 ..... rig
381, " No 9 300
381, " No 10 300
384, (Donaldson) Shirley, H & Co No 3 1200
384, " " No 4 1700
384, " " No 5 1800
384, " " No 6 1200
384, " " No 7 1100
384, " " No 8 1100
384, " " No 9 600
384, (F W Andrews) S H & Co No 4 (fishing) 1800
382, Rathbone & Co No 2 ..... drilling
385, Smith, Newell & Co No 5 2000
385, " No 6 1800
385, Smith, Newell & Co No 7 ..... sand
385, Newell Oil Co No 1 800
385, " No 2 ..... rig
385, John Forest & Co No 4 ..... sand
385, " No 5 1800
385, " No 6 1000
385, " No 7 ..... rig
385, " No 8 600
386, Merrick & Rose (old) ..... rig
420, Coast & Sons No 25 500
420, " No 26 200
420, " No 30 700
420, " No 32 200
421, (Mallory) H S & Co No 11 900
421, " " No 12 ..... rig
421, (King) " No 5 ..... rig
421, P T & W C Kennedy No 6 ..... sand
426, Kane Oil Co No 14 1800
426, " No 35 (fishing) 1100
426, " No 44 2000
3767, Roy & Archer No 5 900
3767, " No 6 ..... rig
3767, Craig & Cappeau No 24 1500
3767, " No 25 1300
3767, " No 26 ..... rig
3767, " No 31 1800
3767, " No 34 1200
3767, Ass Producers & Craig & Cappeau No 9 1800
3767, " " No 10 600
3767, " " No 11 1900
3767, " " No 12 600
3775, P T & W C Kennedy No 12 300
3775, Thompson & Denman (old) ..... rig

New rigs 11
Old rigs 2
Drilling 46
Total 59

Grand Valley.

Huidekoper, L B Wood & Co ..... rig
J W Fisher, " No 1 ..... rig bldg
Hunter, " No 6 200
" " No 7 ..... rig
Gibbs, " No 3 300
Merritt, Miller & Crippens No 9 ..... sand
" " No 10 100
" " No 12 ..... rig
" " No 13 ..... rig bldg
Blakeslee, " No 5 ..... drilling

Blakeslee, Miller & Crippens No 6.. rig
" " " No 7.. rig bldg
Lot 196, W W Benedict & Co No 5... sand
" 196, " No 6... rig
" 186, Fertig & Henne No 2..... drilling
" 186, " No 6..... drilling
" 186, " No 7..... rig
" 186, (Campbell) Holman & Hopkins No 5 (fishing). sand
" 186, " " No 8.... drilling
" 186, " " No 9.... rig
" 197, (Blakeslee) Tew Bros & Co No 7.... drilling
" 197, " " No 8.... rig
Phil tract, Tew Bros & Co No 1..... drilling
" " No 2..... rig
" " No 3..... rig bldg
Nason, Emery & Boyer No 6..... drilling
" " No 7..... rig
Lot 187, (Zane) Fertig & Wood No 10 drilling
" 187, " " No 11 rig
" 196, Groves & Sons No 6..... 300
" 196, H P Boyd & Co No 4..... 500
" 196, " No 6..... rig
" 196, Bovee & Duck No 7..... drilling
" 196, " No 8..... rig
" 195, (Emerson) W W Hague No 5 rig
Proper, W W Hague..... rig bldg
Carpenter, W J Jackson & Co No 5. rig
Emerson, Benson & Co No 3..... 300
Lot 150, Nelson Farrell No 6..... 200
" 150, " No 7..... rig
Lot 186, S W Stewart No 9..... drilling
" 186, " No 10..... rig
" 186, " No 11..... rig bldg
" 149, (D Pet Co) G P Kepler No 13 sand
" 149, " " No 14 rig
" 149, " " No 15 rig bldg
" 197, Bell & Hazeltine No 6..... drilling
" 197, " No 7..... rig
" 150-185, John J Carter No 6..... drilling
" 150-185, " No .5..... rig
" 150-185, " ..... rig
" 235, Crippens & Phillips No 2... 200
" 151, (Leckey) Southwest Oil Co No 4.... rig
Putnam, Wayne Oil Co No 3..... drilling
" " No 10 ..... rig
Lot 234, Wm Helm & Co No 2..... rig bldg
" 142, Holman & Hopkins..... drilling
" 146, Whaley & Zane No 2..... rig
" 231, Gelm & Co..... rig
" 138, Daniels, Welble & Co..... rig
" 238, J B Jennings & Grandin... rig
" 53, (J Miller) Frank, Wood & Co.... sand
Hunter, W P Black & Co..... sand

New rigs.....35
Old rigs..... 0
Drilling 28
—
Total 63

Miscellaneous.

Ludlow, Pennsylvania Gas Co..... rig
3663, S B Hughes & Co..... sand
3665, Armstrong et al..... 600
2032, " ..... rig
3671, M J Feeley & Co..... drilling
Jefferson Co, Brookville Gas Co..... 500
2723, National Transit Co No 11..... 1600
2676, " No 16..... drilling
2676, " No 18..... rig
2676, " No 19..... rig bldg
Torpedo, (Nichols) Cook & Co..... drilling
Osmer Run, Horn & Morris..... rig
Youngsville, W Ford & Co..... rig

New rigs..... 6
Old rigs..... 0
Drilling..... 7
—
Total 13

Lower Country.

Venango and Other Sections.

Sage Run, Beers & Son No 3..... rig
Sayers, Wolf & Kugler..... 1000
Hogue, Oil City Fuel Supply Co No 3 300
Dale, " No 5 sand
Benninghoff, " No 6 rig
McBride, Thomas Smith (old)..... rig
Kaufman, A P Dale No 9..... rig
Griffin, Purtell (old) ..... rig
Young, Octave Oil Co No 20 (old)... rig
Pleasantville, Emery, Skinner & Co No 4.... rig
Osmer, Galbraith & Parker (old).... rig
Slab Furnace, Fry & Badger (old). rig
" S P McCalmont (old) rig
Foster (Bully Hill) Galbraith & Smith.... drilling
Mt Hope, Buchanan & Co No 3 (old) rig
Kaufman, Judd & Geiser (old)..... rig
East Sandy, Capt Owston..... sand
Reno, Munross & Co..... sand
Petroleum Centre, Rhodes Bros..... drilling
Benninghoff Run, Fry & Playford.. drilling
Pioneer, H R Davis..... drilling
Columbia Farm, Beers & Son..... drilling
Centreville, Hess & Co..... drilling
Pithole, Dr Shamburg..... rig

Tipperary.

Jas Fox, Hasson & C Beers..... sand
Moore, McCracken..... drilling
" Fisher Bros..... rig
Heckathorn, Fern parties..... drilling
" S W Lawrence & Co... drilling
A Moore, Gibson & Co No 2..... rig
Perry, Taylor, Torrey & Murphy... rig
J Fox, McKeever (Davis)..... drilling
M Fox, Judd & Kaufman..... rig bldg

Tarkill.

Webb, Taylor, Torrey & Murphy No 17 (shut down) 300
A Hill, " No 12.... rig
Geo Hill, " No 9..... rig
" " No 10.... 200
" " No 12.... 500
" " No 13.... rig
W H Hill, " No 4 (old) rig
Benton, Benton Oil Co No 9..... rig
Alex Hill, Duncan & Fisher No 9... sand
" " No 10.. 800
" Holt & Dorrington No 5. sand
Huff, Clark & Foster No 4..... drilling
" Kelley & Fisher No 1..... 300
Wm Hill, Fisher & Hill No 7..... sand
" " No 8..... 800
" " No 9..... 800
" " No 10..... rig
" Holt & Dorrington No 5.. drilling
" " No 6.. drilling
" " No 7.. rig bldg
" Boyd & Kane No 3..... sand
" " No 4..... 900
" " No 5..... rig
" Hassan & Cornwall No 3. 300
" " No 4. rig
" Phinney & Bishop No 3.. sand
" " No 4.. drilling
" " No 5.. rig
Sam Hill, Shafer & Marks No 3..... drilling
" Wm F'eming & Co..... drilling
" Levi Cohen & Co No 1.... sand
" Deitrich & Co No 2..... sand
" " No 3..... sand
" " No 4..... rig
Houser, A P Dale & Co No 3..... drilling
Dolan, S P McCalmont (old)..... rig
Judge McCalmont, Canning & Goettell No 6.... drilling
" " No 7.... rig bldg
Huff, Clark, Dufur & Darr..... 500
Benninger, Webb, Steele & Mitchell drilling
Tarkill tract, W C Baum ..... rig

Rockland or Red Valley.

J Jolly, Dale Bros..... rig
" Heydrick & Putnam No 2 (old).... rig
Hetzler, Hite & Co..... drilling
" Morgan & Co..... rig
Graut & Sheasley, W H H Piper (old).... rig

Bullion.

Crawford, McFadden & Co..... sand
W Withrup, Unknown..... drilling
Simcox, McElree & Co..... rig
Gealey, Dennison & Co..... drilling

Nickleville.

John Persing, Whitchill Bros..... drilling
Widow Harns, Koch Bros..... drilling

Vicinity Emlenton.

D Russell, Baum & Co (old)..... rig
Porterfield, A A Hopkins (old) ..... rig
Dr Crawford, Wm Weaver No 6(old) rig
W P Grant, J V Ritts (old)..... rig
Dreibelbeis, Morgan & Mull..... drilling
Piper, (Richie Run) King Bros.... drilling
Shannon, Emlenton Gas Co..... drilling
Kohlmoyer, (Byrom Centre) Bennett & Sons.... sand
Jolly, (Scrubgrass twp) Cooper & Leewalter.... drilling

New rigs.....25
Old rigs.....17
Drilling 53
—
Total 95

Clarion.

Gibbs, John J Carter..... rig bldg
Berlin, Patterson, Leedom & Hayes No 14 (old).... rig
" " No 15(old) rig
Fisher, Staley, McDonell & Deitrich (old).... rig
E Slicker, Painter & Co (old)..... rig
John Henel, Koch Oil Co No 8 (old) rig
H J Smith, Shaffer & Sheasley (old) rig
Lloyd, Dr Metzger (old)..... rig
John Moore, John Deitrich..... 500
Weaver, Kugler & Zellers..... 500
Buzzy, Whitehill & Co..... rig bldg
Amos Mong, A Short..... rig
Miller, Shaffer & Sheasley..... rig
Hahn, White, Crawford & McDowell.... rig bldg

Shull, Woodburn, Phipps & Co..... 300
" Atwater & Black No 2..... 300
Logue, Girard & Elder..... 800
Hartman, Jacob Hahn (old) ..... rig
Wagner & Curl, Ritts (old)..... rig
Peter Moul, Smith, Younkers & Corlett No 2.... rig bldg
Smith, Oak Shade Oil Co No 2..... 200
Heasley, Heasley & Co..... rig
Gloss, Gloss..... drilling
Henry Kiser, Henry Kiser..... 300
Sloan, Brothers & Co..... 300
Widow Black, Seybert..... 800
Metzger, Youkers, Smith & Corlett. 850
Call, P F Kribbs..... 400
Hosterman, Wilson & Hosterman No 1.... 800
" " No 2 ... rig
Brown, J V Ritts (old)..... rig
Kepler, Heater..... rig

New rigs 9
Old rigs 10
Wells drilling..... 13
—
Total 32

Butler and Armstrong.

Titley, Titley & Bros No 9..... rig
Black, Ross, Reynolds & Co (old)... rig
Dulity, Ireland & Hughes No 7..... sand
Miller, Dennison & Fleegler (Summit wells) No 3. sand
" " " No 4. sand
" " " No 5. sand
" " " No 6. 100
" " " No 7. rig bldg
S Miller, W G Crawford & Co (old).. rig
Glenn, W P Turner & Co No 3..... 1300
" " No 4..... rig bldg
Frederick, Jacob Frederick Oil Co No 4.... 700
" J C Geisford & Co No 1. 1200
Duffey, McBride & Campbell No 3.. 1300
" " No 4.... rig bldg
Hickey, Boyd & Semple..... sand
Emfinger, Boyd & Semple No 2 (old) rig
Glenn, G F Fetzer & Co No 7..... 1000
" " No 8..... 300
" C A Hite No 1..... rig bldg
Baker, Bell, Byers & Co..... 300
McCue, Father Quilter..... rig bldg
Jos Herturck, Seibert Bros..... rig bldg
Brownfield, McElroy, Vensel & Co No 1 (fishing). 500
Murtland, Troutman Oil Co No 3... 300
" " No 4... rig bldg
Brownfield, Richard Jennings..... rig bldg
Barnhart, Reep & Sutton No 4..... sand
" " No 5..... rig bldg
David Shakeley, Bruce, McCormick & Co.... 800
Jenny Boyle, Showalter Bros & Hartman.... 500
Barnhart, Vensel, Larkin & Co No 2 rig bldg
Black heirs, Turner & Co..... sand
John Boyle, J Hartman..... rig
'Squire Reatt, Hunter & Cummings (old).... rig
Piersol, Phillips Bros No 4..... 300
S H Critchlow, Phillips Bros..... sand
Reeder, Extension Oil Co No 2..... 650
Wallace, White & Co..... 1300
Railroad lot, Wm Semple Jr & Co.. 1200
Roder, McJunken & Co..... rig bldg
Galesbaugh, Leidecker & Co (old).. rig
Burr, Schmick & Co 600
Critchlow, Uniontown Oil Co No 2. 1200
Reibold, Painter Bros..... rig bldg
Markle, Lappe & Co..... 1300
Cramer, Cramer & Co..... 1200
Beartmas, Bowers & Co..... rig bldg
Adderhart, Christie Bros..... 500

St. Joe.

Angert, P C L & P Co..... 900
Slater McGuire & Slater ..... sand
Neff, Phillips Bros No 5..... 200
Witt, Mulligan & Co..... drilling
Mrs Hasler, Christie & Co..... rig

Martinsburg.

Abner Kelley, McKissock & Co..... 700
Stevenson, Bowser & Stevenson..... 300
Turner, McKee..... rig
Edmunds, Edmunds & Co..... drilling

Thorn Creek.

Mangell, Dr Bolard & Co No 2 (old) rig
Chas Morrison, Clark & McKinney No 2.... 1200
" " No 3.... 200
Maharg, Shetter, McKelvey & Co No 2.... 1400
" " No 3.... rig
Girard, " No 2.... 1400
Miller, " ..... rig
Hayes lot, Starr & Co..... 1400
Kerstine, McClung & Co No 2..... 800
Bulford, Iman, McBride & Campbell No 1.... 1600
" Greenlee & Co..... 700
Bulford, Sam Armstrong..... 600
Burton, Farmers Oil Co..... 1100

Maharg, Bolard & Smith No 2 300
" " No 3 ..... rig bldg
Girard, Phillips Bros No 2 1300
John Klinger, Iman, Waldron & Co rig bldg
McLaughlin, Thorn Oil Co No 10 (fishing) 300
" " No 12 ..... rig
Morrison heirs, " No 11 400
Burton, Thayer & Co 600

New rigs 22
Old rigs 6
Drilling 51
Total 79

Shoustown, Etc.

Thos Pinkerton, J S McKelvy (old) ..... rig
Breittenstein, McGrew Bros (fishing) 1350
Glenfield Station, Kilbuck Oil Co ..... drilling
Isaac Harper, Raccoon Oil Co No 2 (old) ..... rig
Robert McCartney, " No 2 ..... rig
Charles Eachel, " No 2 ..... rig
" " No 4 ..... rig bldg
A P Morrow, " No 2 (fishing) 700
John Morrow, " No 3 800
Kennedy, " No 1 ..... rig bldg
Marks, " No 1 300
Jordan, Watson & Co (old) ..... rig
" Watson & Co (old) ..... rig
Robert Boyce, J A Tomlinson 1300
Gilmore, Philadelphia Co No 3 400
" " No 4 ..... drilling
Stone, McFarland 500
Downing, Allegheny Oil Co No 5 ..... drilling
Cookson, " No 4 ..... drilling
Fair Oaks, Economites ..... drilling
Porter, Frankie Folsom Oil Co 800
Thompson, Shannon & Clark No 2 ..... rig
" " No 3 ..... rig
" " No 4 ..... rig bldg
Purdy, Sam Galey No 1 ..... sand
Gilmore, Galey Bros No 1 300
J D Byers, Tomlinson & Co ..... rig
Riddle, Philadelphia Co ..... rig
McGee, Vandergrift & Co ..... drilling

Georgetown, Etc.

Fishel Connors & Boyd ..... drilling
Fordyce E M Hukill & Co No 1 (shut down) 1300
Gregg, E M Hukill & Co No 1 (fishing) 2000
Girard, E M Hukill & Co No 1 Dunkard (shut down) ..... sand
Girard, E M Hukill & Co No 2 Dunkard (shut down) ..... sand
Hathaway, E M Hukill & Co No 1 (shut down) 1000
Mt. Morris, E M Hukill & Co ..... drilling
Longanecker, " (old) ..... rig
Farmington, W Va, E M Hukill & Co ..... drilling

Green county, (Phillips farm) I Willets ..... rig
Mineral, (Greene Co) Johnston & Hamilton ..... rig

New rigs 11
Old rigs and shut down 9
Drilling 21
Total 41

Washington.

Gordon, P L & H Co No 5 1350
Hess, " No 1 (fishing) 2100
" " No 3 800
" " No 4 1200
Taylor, " No 1 (shutdown) 2250
Weaver, Citizens' Oil & Gas Co No 2 850
I Wilson, Vandergrifts (old) ..... rig
Johnson, " (old) ..... rig
Hall, " No 3 650
" " No 4 300
Taylorstown, Vandergrifts No 1 ..... sand
Barre, " No 3 2000
" " No 4 1600
" " No 5 1250
" " No 6 900
Mary Miller, Reed & Co No 1 1100
Morgan, Union Oil Co No 1 2470
" " No 2 1000
Wm Davis, " No 1 1750
" " No 2 1600
Taylor, Union Oil Co No 2 1500
" " No 3 1635
" " No 4 2440
Dye, " No 1 ..... rig
Wylie, A P Co and others No 1 2250
" " No 2 1100
" " No 3 610
" " No 4 ..... rig bldg
Linn, Coast, Sons & Co No 1 (shut down) 1650
" " No 2 1900
Clark, Thayer Oil Co No 3 2434
" " No 4 1450
" " No 5 825
Brownlee, Hallam & Co (old) ..... rig
Smith, Willets, Young, Craig & Co No 2 2130
" " No 4 1600
" " No 5 200
" " No 6 ..... rig bldg
Cameron, " No 4 1250
" " No 5 1200
" " No 6 1750
" " No 7 1300
" " No 8 ..... rig bldg
Zelt, A P Co & Union Oil Co No 1 2425
" " No 2 (old) ..... rig
Baker's Station, Dyer & Roberts 750
Munce Heirs, Willets & Son No 8 1200
" " No 9 1650
" " No 10 1470
" " No 11 200

Munce heirs, Willets & Son No 12 ..... rig
" " No 13 ..... rig bldg
McGowan, E M Hukill & Co No 1 2310
McDonough, I Willets & Co 100
Manifold, Pew & Emerson No 2 1000
Kountz, Pew & Emerson No 1 (shut down) 1600
" " No 2 (shut down) 2440
Miller, Pew & Emerson (dry in 50-foot) 2250
Barre, " (old) ..... rig
J Munce, " (shut down) 600
Andrews, Wilson, Brenneman & Weaver 200
Parsill, Fisher Oil Co 1150
Wade, B B Campbell & Co 2000
Lizzie Magahaey, Roth, Peffer & Dyer 1800
Hall, W S Guffey & Co 2050
W J Munce, John McKeown No 1 1550
" " No 3 2050
" " No 4 1850
" " No 5 1800
Martin, " No 6 1775
" " No 7 800
Munce " No 8 1600
Coal Center, (B C Jackman farm) Hornbake ..... drilling
Shirls, Harrison Shirls No 2 2390
" " No 3 2315
Dr Stewart, Craig & Co 2490
Shrontz, Nail City Oil Co 550
Hallam lot, Garrett & Co (old) ..... rig
Price, Crocker & Co 350
Peters Creek, (Anderson Station) Knox & Co 1950
Wolf, Craig & Co (old) ..... rig
Fergus, " No 1 1000
McBride, Manufacturers' Gas Co 2350
Malloy, Ten-Mile Oil Co 900
Fair Grounds, Wheeling Oil Co 2350
Martin, Central Oil Co No 1 1600
" " No 2 810
Wolf, Robbins & Co (old) ..... rig
Lane, Howard & Co ..... rig
Forest lot, Craig & Co 1600
Wright, Fretts (old) ..... rig
John Murdock, Millers Oil Co (old) ..... rig
Johnson lot, Cotton & Co 650
Martin, Garrett & Co ..... rig bldg
Boyce Station, Philadelphia Co ..... drilling
Wylie, Munhall & Co 1800
Moundsville W Va, Craig & Co ..... sand
Hart lot, McKeever & Co 1600
Cannonsburg, Manufacturers' Gas Co ..... 2 drilling
Donaldson, Robbins & Co 1058
Taylorstown, West Virginia Natural Gas Co ..... rig bldg

New rigs 9
Old rigs 10
Drilling 84
Total 103

The Southwest Pennsylvania Pipe Line.

The 6-inch oil line of the Southwest Pennsylvania Pipe Lines, extending from Ewing's Station, on the Chartiers Railroad, to Carbon Centre, Butler county, has been completed, and is now moving Washington county north across the country at a lively rate. The length of the line from Ewing's to Carbon Centre is about sixty miles. At the latter place the line connects with the main pipes of the United Lines. At Ewing's, the company has erected six 30,000 barrel iron tanks and three or four will be completed during the month. These, in addition to the three put up on the Hall farm last winter, will make storage room for nearly 400,000 barrels of oil. A pump station has also been built at Ewing's, from which place the oil will be pumped through the line by a large Worthington pump at the rate of 9000 barrels per day.

THE Suburban Gas Company, of Pittsburgh, a recent incorporation, with a capital stock of $100,000, has been absorbed by the Philadelphia Company. It had mains and surface pipes in the streets of Crafton, Mansfield and several other towns along the Panhandle Railroad, but depended for its supply of natural gas, on the Philadelphia Company.

ANOTHER strike of natural gas is reported from Wisconsin, this time at Dundas, in Calumet county. The first strike was made at Appleton.

An Important Decision,

In the Supreme Court of Appeals, at Wheeling, West Virginia, on July 3, an opinion of interest to oil and gas men, as well as to persons leasing their properties for oil and gas purposes, was handed down. It was the suit of the Wood County Petroleum Company vs. the West Virginia Transportation Company. This case arose out of the sinking of a well under an oil lease, and the company finding gas, using the gas fuel and selling the same to others. The appellees sought to recover the value of the gas so disposed of and used, on the ground that there was no clause in the lease giving the lessees the right to use or sell the gas. The court held that there was no special property in the gas in the landlord, he never having had possession or control of it.

DURING the six months of the present year ending June 30, the receipts of the Philadelphia Company, of Pittsburgh, for natural gas, averaged about $130,000 per month, while the expenses have averaged $45,136 per month.

THE Paola Gas Company, of Paola, Kansas, has struck a good vein of natural gas at a depth of 300 feet. This is the fourth well found in this part of Kansas by this company.

THE Wheeling Natural Gas Company expects to supply Wheeling, Martin's Ferry and Bellaire with natural gas by September 20.

THE PETROLEUM AGE,
DEVOTED TO THE
INTERESTS OF THE PETROLEUM TRADE.
PUBLISHED MONTHLY BY
McMULLEN, SNELL & ARMOR,
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THE PRODUCING REGION.

At the beginning of July there were 198 new rigs and 402 drilling wells in the New York and Pennsylvania oil regions, a total of 600. The number of wells completed in July was 358, with an estimated new production of 10,119 barrels. The dry holes numbered 46, leaving 312 productive wells, with an average yield of about 32½ barrels. During June the entire region completed 316 productive wells and 56 dry holes, and the average of the new wells June 30 was 27¼ barrels. These figures show a decrease of 14 completed wells with an increase of 1192 barrels in the new production. Washington and Tarkill are again the points that furnish increased production. At the close of July there were 170 new rigs, 146 old rigs and 377 drilling wells in the region, a total of 693, as compared with 198 new rigs, 143 old ones and 402 drilling wells at the close of June.

ALLEGANY FIELD.

Clarksville is the only portion of the Allegany field that shows any strong desire to produce oil at the present ruling quotations. The other sections present a few scattered operations which make the July totals read—25 wells completed, with 8 new rigs and 18 drilling wells under way. This is a decline of 6 new wells, of 5 new rigs and 6 wells drilling from the totals of the preceding month. The National Transit Company, on lot 61, Wirt, and the Cuba Gas Company, on lot 5, Clarksville, are each credited with a fair gas well, which make the two dry holes of the July report. The Allegany Pipe Line runs averaged 6802 barrels a day in July, 6981 barrels in June and 6535 barrels in May. The average daily runs for July one year ago were 7363, and for July, 1884, 11,114 barrels.

THE BRADFORD FIELD.

The chronicler of events in the Bradford field finds little that is noteworthy in his wanderings over its broad area. Here and there a drilling well is under way, but the operations are widely scattered, and the new wells drop rapidly to the level of the old. Seven fewer wells were completed in July than in June, and at the close of the month there is a decrease of two rigs and drilling wells. The average daily pipe line runs of the Bradford field were 27,587 barrels in July and 28,790 barrels in June. For July, 1885, the runs averaged 30,657 barrels a day.

WARREN AND FOREST.

The Middle field completed 170 wells in July, including 16 dry holes; the new production is estimated at 2903 barrels. This is a decrease of 3 wells and 87 barrels, as compared with June. Kane and Grand Valley furnish 122 of the whole number of wells, and 2497 barrels of the new production. The record of active operations shows 70 new rigs, 19 old rigs and 111 drilling wells in the Middle field on the 31st of July, as contrasted with 72 new rigs, 21 old rigs and 145 wells drilling on June 30th.

KINZUA VILLAGE.—Morse & Collins, No. 4, on warrant 5563, Weed lands, west of the Allegheny river, at Kinzua Village, surprised its owners and the trade by starting at 250 barrels, and afforded additional evidence to the theory of a new pool on that side. The experiment of J. E. Fogel & Co., on the Richardson lands, northeast of the Barnsdall duster was a failure.

CLARENDON AND TIONA.—There is a notable decline in new operations throughout the great close sand area of Warren county. The well of "Jakey, the Jew," or the Junk Oil Company, on the Herzell lands, north of Stoneham, after creating a ripple of excitement among operators in that section, has settled down to the next thing to a dry hole. It is rated as a one or two barrel well, and will hardly increase the number of rigs in this end of the field. The well of Henderson, Spence & Richards, on lot 286, between Sheffield and Tiona, was drilled through the Tiona formation and down to the Cherry Grove sand, without finding oil in paying quantities. The duster of Barnum & Leasure, northwest corner of lot 444, Pleasant township, struck the Clarendon sand at a depth of 787 feet; it was 126 feet thick, with a break of three feet in the centre. At 1120 feet another sand was found ninety-three feet in thickness which contained a small showing of oil. A third sand was struck at 1498 feet which proved 75 feet in thickness and contained neither oil nor gas. The well was finally abandoned at 1586 feet. Magee & King found a dry hole on the Sill farm, southwest of their small producer on the Sechrist lands. The new extension south of Tiona is moderately active and fair wells continue to be the rule on lots 321 and 324. The streak is narrow and its southern boundary is practically as yet undetermined.

COOPER AND BALLTOWN.—The Cooper district continues quiet, and its pipe line runs dropped off at the rate of 23 barrels a day in July. Balltown is quieting down more slowly. N. F. Clark keeps one string of tools going on the northeast, while drilling on the southwest will doubtless come to a standstill the present month. The Anchor Oil Company completed its two last wells on 5214, which were both quite small. May, Kelley & Grandin are drilling No. 57, which is their last well on 5215. With its completion this firm has forty-nine producing wells on the Cook lands, warrants 5236 and 5215, out of a total of fifty-seven drilled. James Welsh has completed a test well near the mouth of Salmon run, one mile in advance of developments, with indifferent results. The Balltown runs averaged 1161 and the Cooper 582 barrels a day in July.

KANE.—The glory of Kane is rapidly fading, and the field, as a factor with the speculative fraternity, is "out of the ring." Nevertheless a fair amount of drilling is still under way on the north, and the production as shown by the pipe line runs, above 5000 barrels a day. The runs for June averaged 5702, and for July 5321 barrels a day. The Union Oil Company drilled a heavy salt water well on lot 419, which makes a sharper line for the western edge of the field. Clinton & Swayne have a second well under way on lot 345. The Mallory venture on lot 344, has been delayed by a fishing job. Rathbun & Co. are drilling another well north of their producer on lot 382. Lot 385 has furnished some very good wells the past month, and the operators report better results than they had reason to expect. Kane completed 62 wells in July, with a new production of 1935; in

June 52 wells were completed, with a yield of 2168 barrels. The Union Oil Company suspended operations in July, and not a single drilling well will be placed to its credit for August in the Kane section. The Kane Oil Company, Coast & Sons, and one or two other firms, will speedily follow the example. At the close of the month there were 11 rigs up and 46 wells drilling, as compared with 17 rigs and 65 drilling wells at the close of June.

GRAND VALLEY.—Grand Valley failed to enlarge her area of available territory during the month last closed. The production as shown by the pipe line runs averaged 1481 barrels a day in July, 1074 barrels in June, 731 barrels in May and 300 barrels in April. Sixty wells were completed in July and 50 in June. On the last of the month the count showed no material decrease in the amount of new work under way, footing up 63 rigs and drilling wells, as against 65 at the end of the month preceding. The wells outside of the proper limits of the field were nearly all failures. Since the first of the month a good strike has been reported on lot 138, near Selkirk Station, on the D., A. V. & P. R. R.

THE LOWER COUNTRY.

The Lower country furnishes more than 60 per cent. of the new production for July, and about 40 per cent. of the entire number of wells completed. More than half of the dry holes are likewise found in this grand division of the producing region. Tarkill, in Venango county, is the district to which the greatest amount of new production is credited, while Washington and the other sections swell the total to 6839 barrels. On the last day of the month the lower country had 76 rigs up and building and 222 drilling wells under way, as compared with 98 rigs and 204 wells drilling June 30.

VENANGO.—Old Venango county is receiving another scrutinizing search by the eager seekers after oleaginous wealth. New pools continue to be opened up within her borders and the remark of one of her faithful admirers, that "there is as much undeveloped territory in Venango county as in any other county on the belt," seems very likely to prove true. The Tarkill district increased its pipe line runs from an average of 1262 barrels a day in June to 4038 barrels in July, but the phenomenal little pool is almost entirely drilled over. Lines were crowded and wells sunk as closely in this favored little spot as the circumstances would admit with the usual result of rapid drainage, and its history for the coming months must be one of decay. Numerous dry holes already define its limits on the north and west, and the present month will witness a heavy drop in the amount of active operations. Forty-five wells were completed in July, including two dry holes, and forty rigs and drilling wells were progressing at the end of July.

Northeast of Tarkill a new pool has been opened by the discovery of three or four ten-barrel wells, and considerable excitement prevails. Land is eagerly being picked up, and Tarkill's discarded drilling tools find fresh employment in the new locality. This latest development, of which great things are hoped, bears the classic name of Tipperary.

Red Valley is quiet, with the exception of a slight activity on its eastern edge. The daily runs from this field have averaged as follows: January 783 barrels, February 1017, March 1206, April 1231, May 1260, June 1181 and July 1039. The total runs from this district up to July 31, amounts to 271,227 barrels.

The new development at Nickleville, to the northeast of Red Valley, did not improve its outlook by the drilling done in July. Judd & Co. found a mate to their first small well, while of the three other completed wells one was a fair gasser and two total failures.

A few strings of tools are kept busy along Oil Creek, between Titusville and Oil City, and these, with the prolific spots noted above, and the scattered operations about Emlenton, Bullion, etc., swell Venango's record for July to 66 completed wells, with a new production of 3366 barrels, 25 new rigs, 17 old rigs and 53 drilling wells.

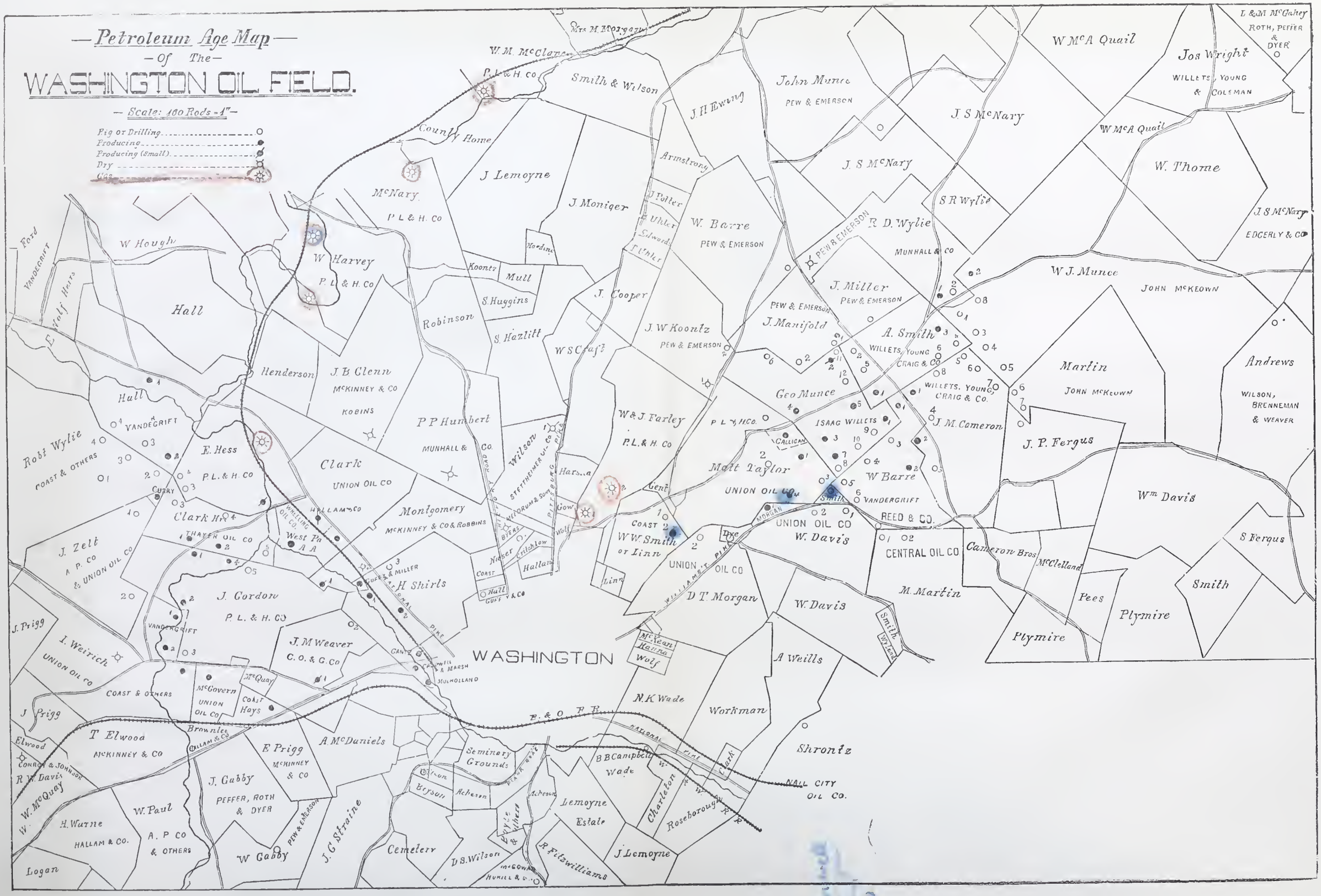
CLARION.—The pipe line runs show a steady decline in the production of the Cogley oil field, and the monthly count indicates a corresponding decrease in the volume of field operations. Wildcatting has proved unsuccessful in the county for months and the work done prospecting in July swelled the number of failures. The well drilled by the DuBois Oil Company, on the Dougherty farm, near Vowinkle Station, on the narrow gauge railroad proved a failure. A dry hole was also found on the Leslie farm, at the southwestern end of the Cogley belt. Interest is maintained in the Shippenville district by local operators, who are doing a small amount of drilling on what they are demonstrating to be small Clarion territory. The Clarion oleaginous heart was fired when Korner Bros. drilled an old third-sand well, on the Beals farm, near Beaver City, deeper, and it began flowing at the rate of 100 barrels, but its flutter had ceased before the close of July, for the well had dwindled to a pumper with a capacity below 20 barrels. Other wells have been drilled to this stratum on the western side of the belt, which is separated from the regular third sand by a short, vertical depth of rock. The distance from the top of the third sand to the top of the fourth is sixty feet. D. O. White and other producers will sink a few wells, on a line with the Korner strike, to the fourth sand.

BUTLER AND ARMSTRONG.—Three localities in these counties keep alive the flagging interest in a field which is freighted with importance in the memories of the past. At Reibold, at the southwestern end of the field, drilling is attended with uncertain results, and the ever hopeful producer meets with a surprise at every turn of the rumbling bull-wheel. Since the completion of the Uniontown Oil Company's well, on the Critchlow farm, which proved a 30 barrel producer, Phillips Bros. have completed two dusters on adjoining lands, and where good wells were confidently expected. Their well on the S. H. Critchlow farm, southwest of the producing wells, has been drilled into the sand and started at six barrels per hour. The Uniontown Oil Company's No. 2, on the J. O. Critchlow, and the well on the railroad lot, have been completed since the first of the month and are both fair producers. The southeastern prolongation of the Thorn Creek pool has a more lively appearance than it has worn since the close of the excitement which resulted in its rapid development. Four wells were completed along the creek in July and two of them were failures. On the Charles Morrison, Clark & McKinney finished a fifty barrel well, and Shettter, McKelvy & Co. one on the Maharg, which is rated at 20 barrels. The Thorn Oil Company found a duster on the A. Welsh farm, southwest of the dry hole drilled by Christie Bros., on the Wise. A long ways up the creek, on the Walker farm, Frazier & Co. added another failure to the long list in this section. The canvass of this famous scrambling ground for crude wealth showed 21 rigs were up and building and wells drilling on the first of the month. The Extension Oil Company is drilling a second well southeast of Jefferson Centre. A number

P. 1397

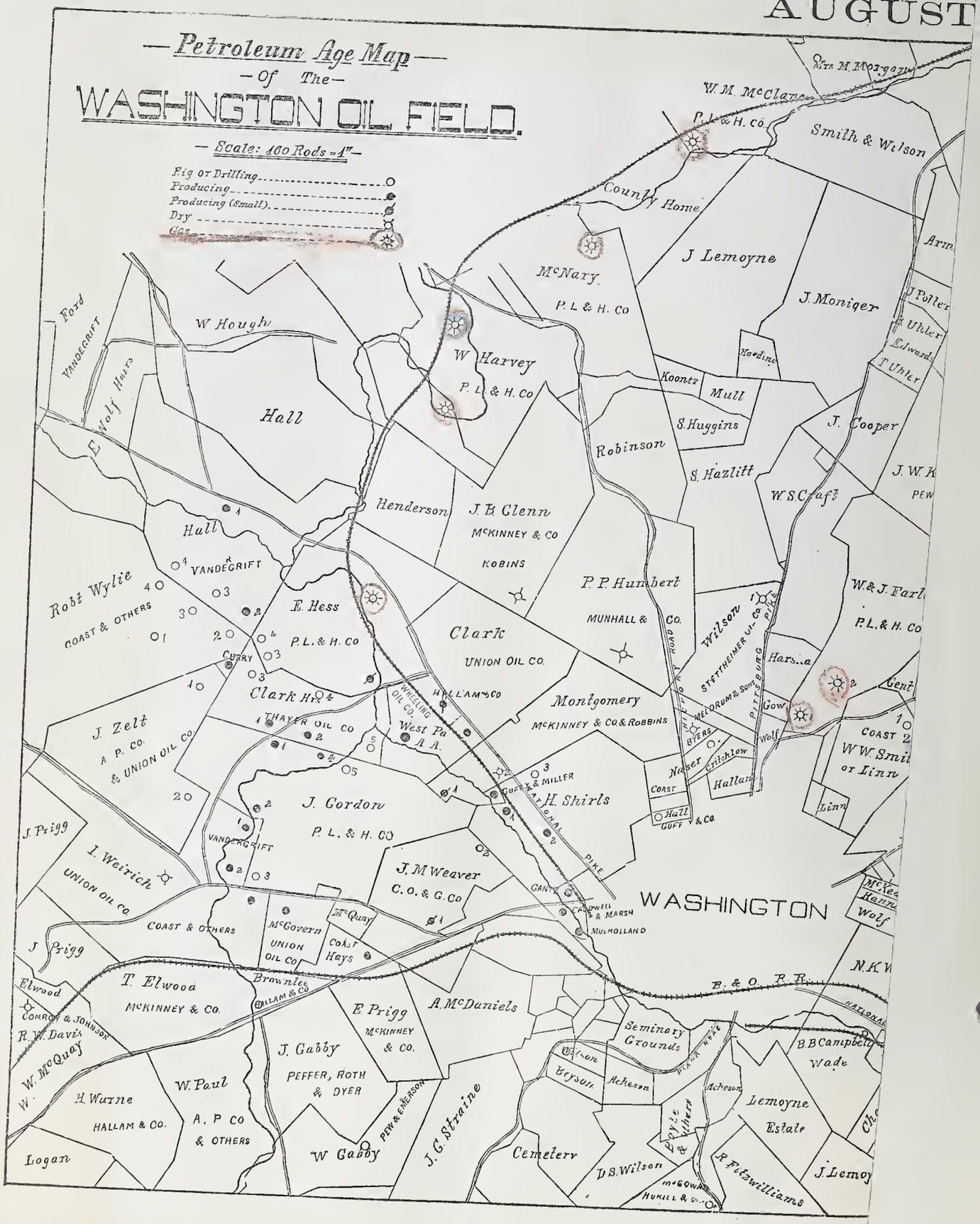
Supplement to the PETROLEUM AGE.

AUGUST, 1886.



Supplement to the PI

AUGUST



of important wells have been completed since the July AGE was issued. The well of Showalter Bros. & Hartman, on the Church lot, 400 rods in advance of the large wells on the Barnhart and Murtland farms, is a 15-barrel producer and lengthens out the streak to the south. The same firm completed a well on the Jennie Boyle farm, slightly to the east of the charmed line, which was dry when drilled through the sand, and was subsequently raised to a producer which is reported to have a daily yield between 10 and 15 barrels. A good well was struck by Boyd & Semple, on the Hickey farm, about one mile southwest of their group of producing wells on the Bromfield. In July 33 wells were completed in the Butler and Armstrong fields, having a new production on the last day of the month of 862 barrels. Of this number of wells 7 were dry. Compared with June there was an increase of 7 wells and of 76 barrels of new production. At the close of July there were 22 new rigs, 6 old ones and 51 wells drilling, a total of 79. The count on the previous month gave an aggregate of 73.

SHOUSTOWN.

The Shoustown oil field is fruitful in surprises and affords the trade several each month. In June they were found along the northern border of the district, but in July and August they skirt the southern line. In the northwestern corner of the Joseph Gilmore farm Westinghouse or the Philadelphia Company finished a well which was producing about 125 barrels per day at the close of the month. Southwest of the Wallace well on the Pendy farm Sam Galey struck oil in a well which is rated all the way from 50 to 75 barrels. The well on the Stevenson heirs farm holds up at a remarkable gait and is the best well in the field. The well drilled on the Porter lease in a ravine between Shannopin and Shoustown by the Frankie Folsom Oil Company came in dry. Westinghouse, Tomlinson and others are starting some wells on Montour Run, south of the Shoustown development.

WASHINGTON.

The massive sands of the Washington oil field have asserted their producing powers in a manner during the first fifteen days of August which has demoralized the trade. And yet in looking at a depressed market through the spray of the great gushers of the field the real bear feature, the Taylorstown well, which has been brought forth during the past month is forgotten. The map of the district, which is presented with this number of the AGE, gives the location of all wells and distinguishes the completed wells up to August 10th. A glance at the map will show that all of the large wells which have exerted a downward pressure on the fractions are found fairly within the limits of the defined field. The well on the Smith lot, surrounded by the Taylor, Barre and Davis farms, was started by Craig & Co., but is now known as the Fisher well, on the Dr. Stewart farm. For the twenty-four hours ending August 13th the well had a production of 3330 barrels. The Taylor No. 4, Morgan No. 1 and Linn No. 2 are all large wells but rather unimportant from the geographical situation. Their production for the twenty-four hours ending on the morning of August 14th is given in the detailed list below. The Munhall No. 2, which is located about 35 feet from McKeown's line, produced 700 barrels in the twenty-four hours ending August 17th. McKeown's No. 3 gauged 1300 barrels in the twenty-four hours ending at the same time. McKeown's No. 6, on the Martin farm, is 45 feet in the sand without finding the upper pay streaks. It has 20 feet yet to go to get the lower pay streak. The Roth, Peffer & Dyer well, on the Lizzie McGahey farm, is shut down on the evening of August 17th to move the boiler. They are building tankage at the well and it is being mystified. At this writing it is confidentially reported to be showing for a well. It is located 280 rods northeast of McKeown's No. 2 on the Munce farm. B. B. Campbell's well on the Wade farm, southeast of the borough, is fishing at a depth of 2000 feet. The Associated Producers No. 1, on the Zelt farm, and Coast & Co.'s well, on the Robert Wylie farm, at the western end of the field, are through the Gordon sand and dry. They are important wells and play havoc with the hopes which were entertained for the western end of the field. The well at Cannonsburg, which was used to depress the market, is a failure, though it affords slender indications which will induce further drilling. The Taylorstown well, located between six and seven miles west of Washington, is a profitable producer and opens a new pool whose outlines are to be determined by further drilling. The tools were taken down August 4th and the well has since, according to reliable reports, been producing between 50 and 75 barrels daily. The bordering lines on the east and south of the Washington field remain to be drawn and there is still room for conjecture and speculation on its possibilities. During July, 10 wells were finished in the field, having a new production on the last day of the month of 2165 barrels. Two of the wells completed were dusters. In June there were 12 wells finished, with a new production of 1879 barrels, and 6 of the new wells were dusters. The monthly count at the close of July showed 9 new rigs, 10 old ones and 84 wells drilling, a total of 103. The report June 30th gave an aggregate of 98.

Below is a list of all wells in the field which were producing July 10th, with their production on that date and the same wells with new ones added to the list with their yield August 14th:

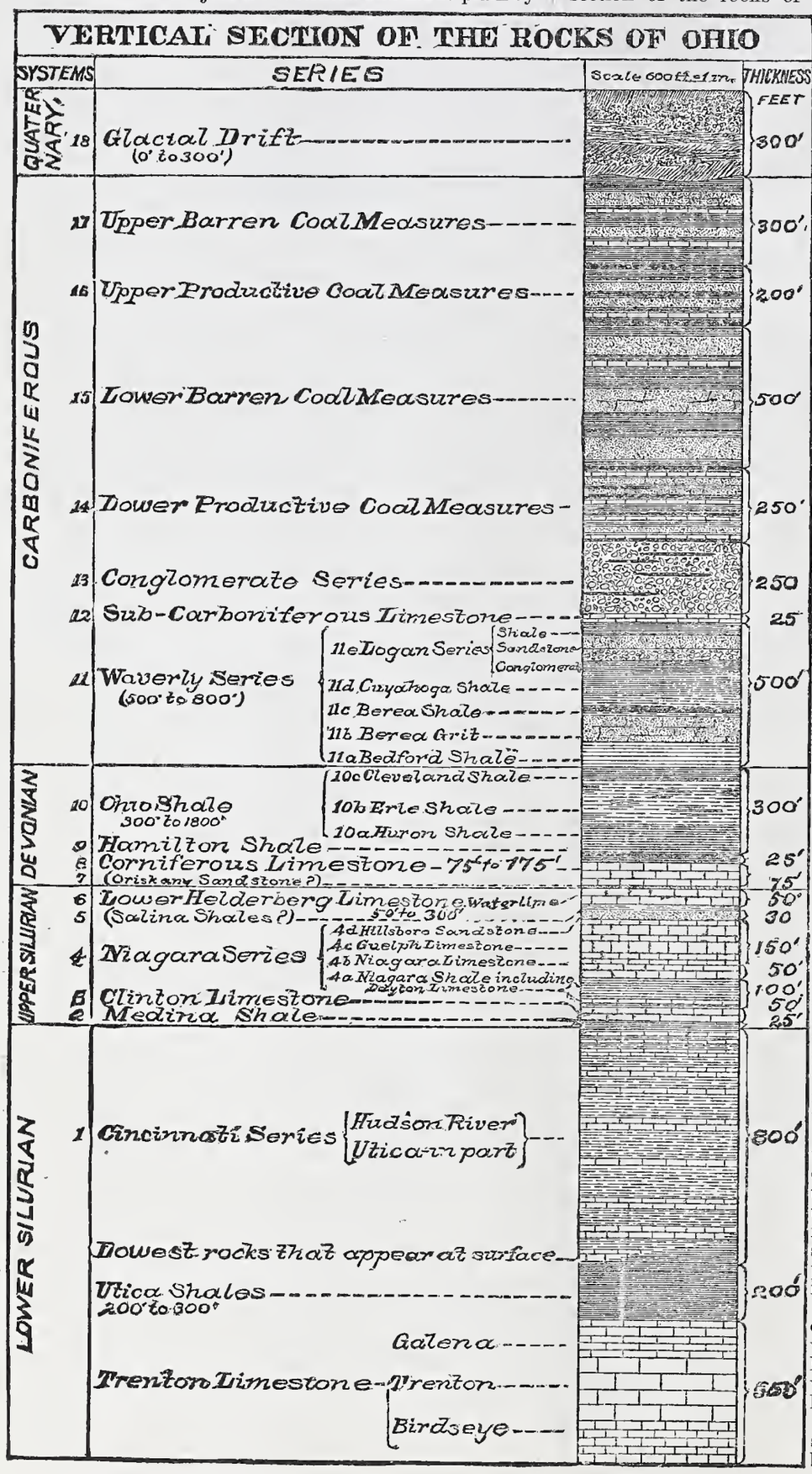
Farm.	Operator.		Produc. July 10. Barrels.	Produc. Aug. 14. Barrels.
Gordon,	P. L. & H. Co.,	No. 1	57	45
"	"	No. 2	5	--
"	"	No. 4	138	85
Hess,	"	No. 2	14	10
Gantz,	Citizens' Oil & Gas Co.,	No. 1	31	30
Weaver,	"	No. 3	7	10
Weirich,	Vandergrift,	No. 1	10	8
"	"	No. 2	45	18
Barre,	"	No. 1	400	303
"	"	No. 2	485	448
Hall,	"	No. 1	18	12
"	"	No. 2	412	432
Curry,	"	No. 1	--	70
Taylor,	Union Oil Co.,	No. 1	607	500
"	"	No. 4	--	981
McGovern,	"	No. 1	31	25
Clark,	"	No. 1	33	20
Morgan,	"	No. 1	--	900
Linn,	Coast & Co.,	No. 2	--	380
Weirich,	"	No. 1	15	15
Hayes,	"	No. 1	11	10
Lead Works Lot,	McKeever & Mulholland,	No. 1	13	13
"	Marsh & Caldwell,	No. 1	13	13
Smith,	Willets, Young, Craig & Co.,	No. 1	106	225
"	" "	No 3	429	276
Cameron,	" "	No. 1	667	575
"	" "	No. 2	85	26
Shirls,	Shirls.	No. 1	70	50
"	"	No. 2	--	70
"	"	No. 3	--	50
Stewart,	Fisher Oil Co		--	2784
Miller,	Guffey & Co.,	No. 1	32	100
Manifold,	Pew & Emerson,	No. 1	255	230
Gabby,	"	No. 1	5	5
Clark,	Thayer & Co.,	No. 1	65	35
"	"	No. 2	470	352
"	"	No. 3	--	482
Munce,	Willets & Son,	No. 1	425	362
"	"	No. 2	500	100
"	"	No. 3	491	312
"	"	No. 4	135	130
"	"	No. 5	120	34
"	"	No 7	360	909
Montgomery,	J. L. McKinney & Co. & Robbins,	No. 1	25	20
Taylo ,	Gal igan & Co.,	No. 1	30	50
Clark,	Hallam & Co.,	No. 1	2	2
Wiley,	Munhall & Co ,	No. 1	130	75
Vandergrift,	Taylorstown,	No. 1	--	50
Munce,	John McKeown,	No. 2	--	350
"	"	No. 3	--	700
Fair Ground,	Wheeling Oil Co.,	No. 1	--	792

Date.	No. wells.	Production.
July 10	39	6,747
August 14	51	13,474
Increase	12	6,727

THE LIMA OIL FIELD.

EXTRACTS FROM PROF. EDWARD ORTON'S PRELIMINARY REPORT ON THE GEOLOGY OF THE NEW OIL AND GAS FIELDS IN OHIO.

PROF. EDWARD ORTON'S Preliminary Report upon Petroleum and Inflammable Gas in Ohio is at hand. It is a pamphlet of seventy-six pages in which the subject is illustrated and made plain by suitable diagrams and maps. In this volume geology is applied to an oil and gas development in a practicable manner, and as far as is possible the geologist has avoided scientific technicalities in clearly presenting facts. In the first section of the book the origin of the new interest in natural gas in Ohio is outlined and a historical sketch is given of the pioneer strikes at Findlay, Bowling Green and Lima. A diagram exhibits a vertical section of the rocks of Ohio, a knowledge of which Prof. Orton states is necessary to an understanding of a description of the occurrence of petroleum and gas in Ohio. This advance report will be read with interest by oil men even if they believe that "geology never filled an oil tank." In this number of the AGE we present the geologist's report on the Lima field and give his conclusions as to the new fields:



THE LIMA OIL FIELD.

Among the centres of production from the new horizon, Lima stands scarcely second in importance. It is rapidly developing into an oil field of considerable proportions, which gives promise thus far of staying quality. The daily production on the first of July, 1886, is estimated to be 1100 barrels. This production has been held back for some time from the lack of tankage. Now that this lack has been supplied, nitro-glycerine will be brought into requisition on the large scale in wells already drilled, with the certainty of largely augmenting their yield.

Lima was not long behind in following the successful examples of Findlay and Bowling Green. An important railroad centre, already actively engaged in many lines of manufacture, full of business energy, and in command of sufficient capital for all promising ventures, it was easy to see that such a flow of natural gas as Findlay had secured would be of immense advantage here. The drill was set to work by the Lima Straw Board Works, an enterprising and successful manufacturing company, in the spring of 1885.

The trial well was located within the grounds of the company and on the bank of the Ottawa river, the top of the casing being about 850 feet above sea level. The section was found to correspond with the Findlay section in all its essential elements.

There were about 400 feet of the upper limestones, the waterlime re-enforcing the Niagara as it does in the western portion of the Findlay field.

The Medina is not a red shale here, but is greenish-blue, like the underlying

Hudson river beds, and it is therefore impossible to draw as sharp lines of division as were found in the preceding wells. The same line of facts holds as to the Utica and Hudson river beds. The lower part of the Hudson river division is darker in color than it is to the eastward. The lowermost beds of the Utica are dark enough to be called black shale. A little gas was found at various horizons in the shale during the drilling.*

The Trenton limestone was struck at 1247 feet, but to the great disappointment of those concerned, no considerable amount of gas was afforded. But as the drill descended a few feet further, oil was found rising in the well. This was an unwelcome discovery, but to save the venture from being an entire failure, and moreover to test the character of the supply, the well was treated thenceforth as an oil well—that is, it was torpedoed, tubed, packed and pumped. In the first six days 200 barrels of oil, in connection with some salt water, were produced, and the supply then ran low.

The oil was dark, or black oil, heavy and offensive in odor, by reason of the presence of sulphuretted hydrogen. Its gravity after exposure was 36° B To those acquainted only with oil of the Pennsylvania types, its quality seemed to condemn it.

The Paper Mill well, already described was the pioneer well in the Lima field, but by itself it would have made but a feeble impression. It was presently followed by the Citizens' well, which was put down in the summer of 1885, by an association of public spirited gentlemen who desired to authenticate the field. This purpose it has served in many ways. It was the first well to yield a steady and regular supply of oil, and it was also the oil of this well that was first tested for refining and other uses in the large way. Forty barrels were sent to Pittsburgh refineries in 1885, and the results obtained did much to inspire confidence in the new production. The well has been an expensive one to maintain. It requires steady pumping night and day to hold the salt water in check. By April 20, 1886, it had yielded about 5000 barrels of oil. It must always be counted as one of the most important wells of the Lima field, dividing the honors fairly with well No. 1.

To most of the Pennsylvania operators that obtained personal knowledge of the Lima well, there seemed but little promise in it. All the conditions were unusual. A flat country, with every outward indication of being extremely regular and undisturbed, at comparatively small elevation above the sea, and the producing rock a lower Silurian limestone, these facts were enough to discourage many who would have eagerly followed up equal promise in a familiar field.

The representative of one Pennsylvania company, however, Mr. I. E. Dean, who was among the first to visit the new field, had been at one time engaged in oil production in Canada, and was well acquainted with its history and value. Mr. Dean was the first to recognize the possibilities here, and to his intelligent and energetic administration most of the early and much of the later development are due. The Trenton Rock Oil Company, organized by him, has done a great deal in the way of proving the new territory. Much of its earlier work proved unproductive, but it had its value in breaking up crude theories and defining safe limits within which to work.

Up to July 1, 1886, the Lima field has produced 51,000 barrels of oil. On April 1, 1886, there were 14 wells in operation, with an average production of 24 barrels per day, according to local reports, which are never under the mark. On May 1st there were 22 wells with a much larger average, and at the same time there were 50 or more new wells under contract in the immediate field. On June 21st the number of producing wells was 34. There were 15 more being drilled, and there were 20 rigs in the field. On July 1st there were 57 producing wells, yielding 10 to 150 barrels each. Six wells are flowing, and there are 51 new derricks in the field.

All of the earlier wells required to be pumped, but the Shade well, No. 1, on the southeast side of the town, completed in February, 1886, proved a flowing well. This was the first of six to date. The use of explosives has converted several of the pumping wells into flowing wells for a time at least.

Some of the wells flow as soon as the rock is struck. The Hume well flowed about 250 barrels in the first two days. It now yields about 30 barrels by pumping. Others that have come in dry, as the Clymer well, are converted by a "shot" into productive pumping wells. The last named well yields 10 or 15 barrels a day. But generally the first behavior of the well is an index to its true character.

As may be inferred from statements already made, the geology of the Lima field is substantially one with that of Findlay. The whole region is underlain with the water lime, the rock being exposed and quarried in the deeper valleys in and around the town.

The elevation of Lima is about 100 feet greater than of Findlay. Unfortunately, the elevations given by the several railroad surveys do not agree.

The elevation of the track at the Dayton & Michigan depot, as given by this road, is 859 feet above tide. A probable correction of 15 feet will bring this figure to 874 feet. By the Lake Erie & Western Railroad, the elevation of the same point is given as 885 feet, and by the Pittsburgh, Fort Wayne & Chicago Railroad, as 873.5 feet. The track of the Chicago & Atlantic road on the south side of the town at the station, is given as 903 feet, but this measurement is entirely independent of the others. These discordant figures have not been harmonized, but inasmuch as the Lake Erie & Western elevations have been used in the Findlay field, the figures of this road will be used here also, although it is probable that they are about 11 feet in excess.

Almost all of the town and of the county adjoining it for several miles on either side, will be embraced within the range of 850 to 900 feet above tide (L. E. & W. crossing, 885).

The oil wells range from 1240 to 1290 feet in depth. The surface of the Trenton in fourteen of the first twenty wells drilled, the extremes of which are twelve miles apart, ranges as follows:

390 Feet below tide.	400 Feet below tide.
390 " " "	403 " " "
393 " " "	406 " " "
394 " " "	407 " " "
395 " " "	421 " " "
395 " " "	432 " " "
398 " " "	445 " " "

The first ten of the list are located in Lima, or immediately adjoining it.

The records that the wells have made with reference to oil production are significant in this connection.

The first two wells flowed oil when the rock was struck (Trenton, 390 below tide).

In the third case, the oil flowed after the well was torpedoed. (Trenton limestone, 393).

The four wells next on the list are all pumping wells, and yield an average of about 20 barrels. Several of them have been torpedoed with good results as to production, but without converting them into flowing wells. —(Trenton limestone, 395–396).

The remaining wells (Trenton limestone 400 feet and more below tide), are all practically failures. It is claimed that the well in which the Trenton is 406 feet below tide would, if pumped, proved a 10-barrel well, but neither this nor any of the others is pumped at the present time. The last three are plugged and abandoned.

It is surprising to see on what a narrow margin success in drilling has thus far turned. It is scarcely possible that this margin will be maintained throughout the field, and the results of later drilling will prove very interesting when brought into comparison with these earliest figures, but thus far certainly geological structure is seen to be connected in a most important way with the yield of oil from Lima wells, and especially with the differentiation of these wells into the several groups already named.

The salt water in any case lies very near the oil. In many wells both are constantly produced. If the pumping is stopped the salt water overcomes the oil. A cessation for a single Sunday in the Citizens' well reduced the daily production of oil from 11 to 8½ inches in the tank, and it required steady work for an entire week to restore the flow. In such cases it would seem that a short stoppage would prove fatal. The brine is of the peculiar character already noted in the other fields, being more

* A better and more orderly record is furnished by A. C. Reichelderfer, Esq., of the Gas Works well. It is as follows:

Drift 18 feet.	Well cased at 395 feet. No more water. Feet.
Limestone.	Light shale continues to.... 880
Sulphur water at 128 feet.	Brown shale begins at..... 880
White lime-tone (Niagara)? begins at 268 feet.	Thin black shale at.....1228
Blue limestone begins at 328 feet.	Oil rock struck at. 1263
Limestone with slate streaks continues to 385 feet.	Oil producing "sand".....1255
	Salt water rock, slushy.....1260

of a bitter than a brine. It is produced from the wells perfectly clear, and with a temperature of 80° F. In many of the wells it is counted no special disadvantage, but is pumped steadily with the oil. It cannot be separated under ground, whether disadvantageous to the well or not.

CHARACTER OF THE LIMA OIL.

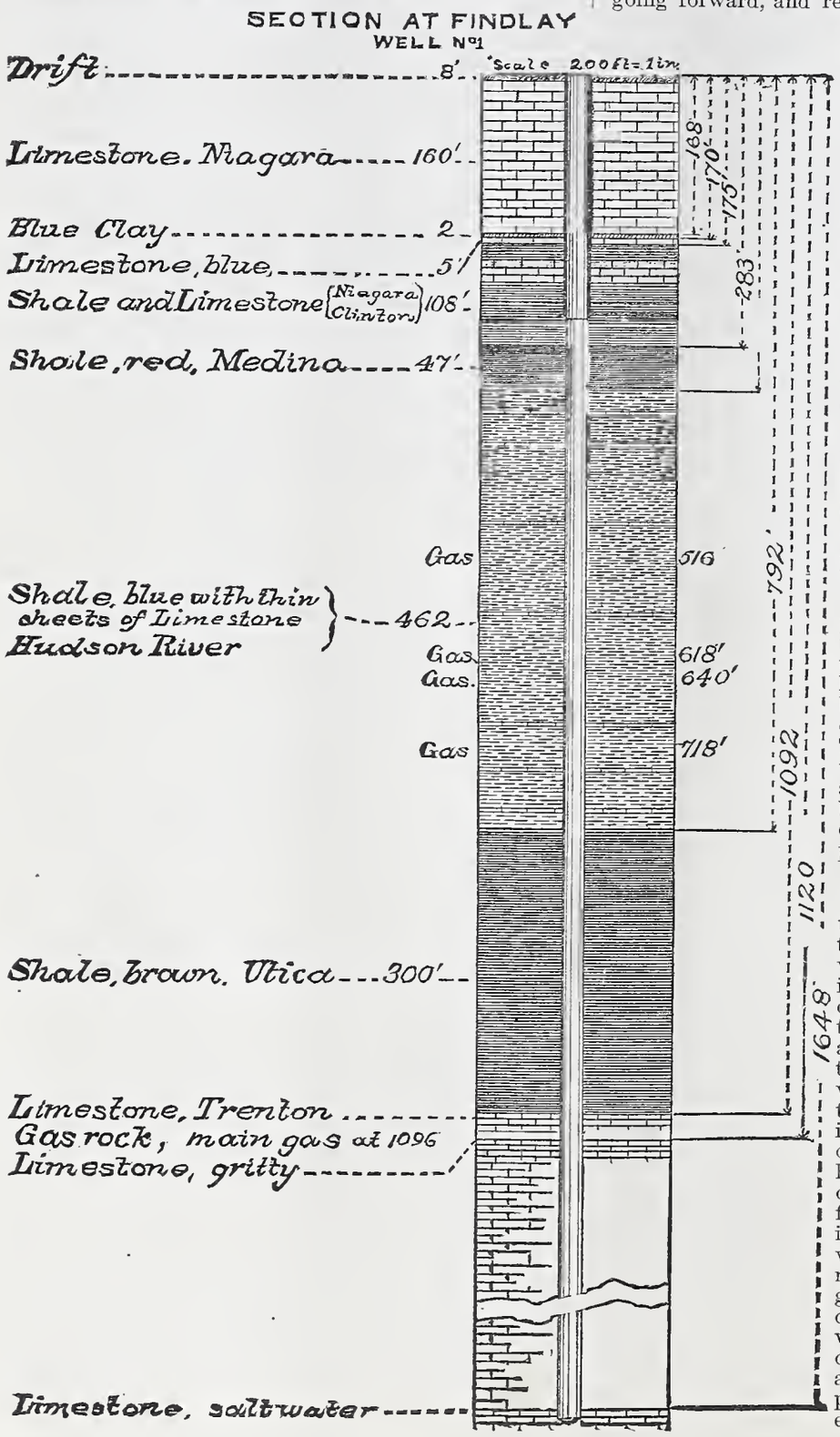
The Lima oil is a *limestone* oil, which is as much as to say that it is a dark, or black, sulphuretted, and rather heavy oil. In these respects it agrees with Canada and Tennessee oils. There is quite a range in gravity, however. In the first well the oil had a gravity of 36° B., but in most of the later wells it reaches 37° or 38°, and in the McCullough well it reaches the high mark of 41° B. Several tests have been made on a fairly large scale, and the results show that the oil can be completely deodorized, that it carries 65 per cent. of illuminating oil, and 26 per cent. of lubricating oil of excellent quality, and other merchantable products.

These results were obtained in Canada refineries, where several barrels were sent, and they are, on the whole, the most favorable that have been reported. The oil was thoroughly deodorized, and each of the several products showed high or fair quality.

From a test made in Philadelphia, a somewhat better percentage of illuminating oil was reported than that given above, but the products were unmarketable by reason of their offensive odor.

The Downer company, of Boston, also makes a favorable report.

The latter company has united with the Edwards Oil Burner Company, of Chicago, to establish a refinery in Lima, and here, without doubt, the best results will be speedily obtained. The work of construction is already going forward, and refining operations will be undertaken at an early day, in which the best appliances and the highest skill will be employed. The refinery will have on completion a capacity of 250 barrels per day.



The promise of the field depends largely on the success of this undertaking. At present the price of Lima oil is 40 cents per barrel, and there are many wells that cannot be pumped for what they yield, but if the value of the oil could be increased 50 or more per cent. their production could still be maintained. The increase of price is to be looked for from the success of refining operations at home.

TANKAGE AND TRANSPORTATION.

Indispensable to a modern oil field are the great systems of storage and transportation that American practice has evolved. The Lima field is soon to be supplied with large tanks and with pipe lines. In fact, the work in both is already well under way.

The Buckeye Pipe Line Company, which is an organization under the same management as the National Transit Company, has nearly completed one 36,000-barrel tank, and has two others of the same size already ordered. The usual system of piping the wells will be at once introduced, and thus the transfer of oil will be accomplished with as great dispatch and as little expense as possible.

EXTENT OF THE FIELD.

The Lima oil field proper extends from the central portions of the town eastward and southward. Comparatively little drilling has been done to the westward or northward, or northeastward, the earliest ventures being such as to discourage further exploration in these directions. A good well has been obtained three miles to the southeast of town, and the interval is now being quite thoroughly tested. The field may be held to extend as far as a fairly continuous series of wells can be followed. Its eastern boundary is not yet defined, but enough wells are now in progress to furnish important testimony in regard to it when their records are complete. Even the districts in which failures have thus far occurred are not to be considered as beyond hope, but patches of productive territory are likely enough to be found within them,

under the thorough search that is now going forward. It would be unprofitable to attempt to lay down the metes and bounds of a field in such an active stage of development as Lima is now passing through.

CONCLUSIONS AS TO THE NEW FIELDS.

1. From the facts already stated, it is obvious that the discovery of oil and gas in the Trenton limestone of Northern Ohio is invested with great economic interest and importance in the localities that have been specially named. Fuel of such character as Findlay gas, has become in our day a factor of the greatest value in many lines of manufacture, and the towns that can secure it gain such an advantage that competition with them is difficult or impossible on the part of towns that are without it.

Oil is in like manner power. In addition to all other uses, it furnishes the best of fuel. Excellent facilities for using it as fuel have been provided of late, and some of these are already introduced on the large scale into Lima and adjacent towns.

The eager search for the new fuel, whether gas or oil, that has been going on, and that is still continued in the State, is fully explained, and in a measure justified by the extraordinary value of these substances when found at their best.

2. The supply of valuable accumulations of oil and gas from the new horizon has thus far been found to be very sharply limited. There are four productive centres at the present time. Others will doubtless be added, but probably within or near to the general boundaries already pointed out. The inference that was hastily drawn from the experience of the towns that led in the search, viz.: that all of Northern Ohio is good oil and gas territory, has been proved to be unfounded. The oil of Pennsylvania and New York has all been derived thus far from less than 400 square miles of working territory, but these 400 square miles are distributed through many thousands, and even through tens of thousands of square miles. The production of the Trenton limestone in Ohio may prove to be as sparsely and as apparently capriciously distributed throughout the districts which it is known to underlie as is the production of the great sandstone sheets of Pennsylvania.

3. The productive territory lies in *spots*, and the different centres cannot be connected by any lines or belts that it is at all worth while to draw. Any two places can be joined on the map by a straight line, it is true, but not a line can be drawn between the productive districts at present known, which is not broken by failures where drilling has been attempted, and no line has yet been found that would lead the driller to fortune. The northeast and southwest line derived from Pennsylvania experience, is perhaps, the favorite direction in the new field also. Lima lies to the southwest of Findlay; so far, good, but in the same line lies Fostoria with two dry holes, Fremont, without a single well in the Trenton that deserves mention, out of a total of eight wells. Between Lima and Findlay wells have been drilled at four points, viz.: Beaver Dam, Bluffton, Mt. Cory and Rawson, and all are failures. To the southwest of Lima is Celina, where the Trenton is reported unproductive. Out of a total of nine locations on this line, two are productive.

Another line on which great expectations have been built, is the north and south line connecting Findlay and Bowling Green, but the line is broken in the middle and at both ends. Between Bowling Green and Findlay, the New Baltimore well has showed unproductive ground, at least in the first well. North of Bowling Green are the three unproductive wells of Toledo. South of Findlay, Arlington, Kenton, Belle Centre, Urbana and Springfield have made an unavailing search for oil or gas in the Trenton. In this case, two localities out of nine in the line have proved successful. Such lines or belts, it is obvious, are worse than none.

The Canada oil field is frequently included in the same belt with Lima and Findlay, but the Canada oil is derived from a rock that is not present at either of these last named points. Its place in the Findlay scale would be 300–400 feet in the air. The Corniferous limestone is the Canada oil rock, and the Trenton is never approached within a thousand feet in this field, and, moreover, there is good reason to believe that the Trenton arch in Ohio was formed ages before the Canada oil rock was deposited.

4. The most important line of facts that has been brought out thus far by the study of the field is the connection which is found to be maintained between the productive areas of the Trenton limestone, and the level which its surface holds with reference to the sea. All of the present production is derived from a quite narrow range of elevations. The gas wells of Findlay find their supply where the limestone lies between 306 and 350 feet below sea level. The *great* gas wells of the field are thus far included in the interval between 330 and 360 feet, both included, below sea level. The gas wells of Bowling Green, including Portage, all find the Trenton at 380 to 400 feet below the sea.

The oil of the several fields has scarcely a wider range. The deepest steady supply of oil comes from the Matthias well, at the foot of the Findlay slope, where the Trenton limestone lies 481 feet below the sea. The bulk of Findlay oil, however, comes from between 400 and 460 feet below the sea. Lima oil is derived from the Trenton where its surface ranges between 390 and 400 feet below the sea. It is highly probable that wider limits will be established under the active development that is going forward, but up to the date when the facts were taken, all the wells agreed fully with the statements here given.

In the Lima district, the descent of the surface of the Trenton to 400 feet or more below sea level, is instantly fatal to it as a source of petroleum.

In no case has oil thus far been produced in any persistent supply from the Trenton limestone where its surface is 500 feet below the sea. The deduction is obvious. Where the surface of the limestone is found 500 feet or more below the sea, one well is enough to determine the character of the immediate field, according to present knowledge. The Carey wells mark the limit in this direction. The Trenton limestone here lies 513 feet below sea level.

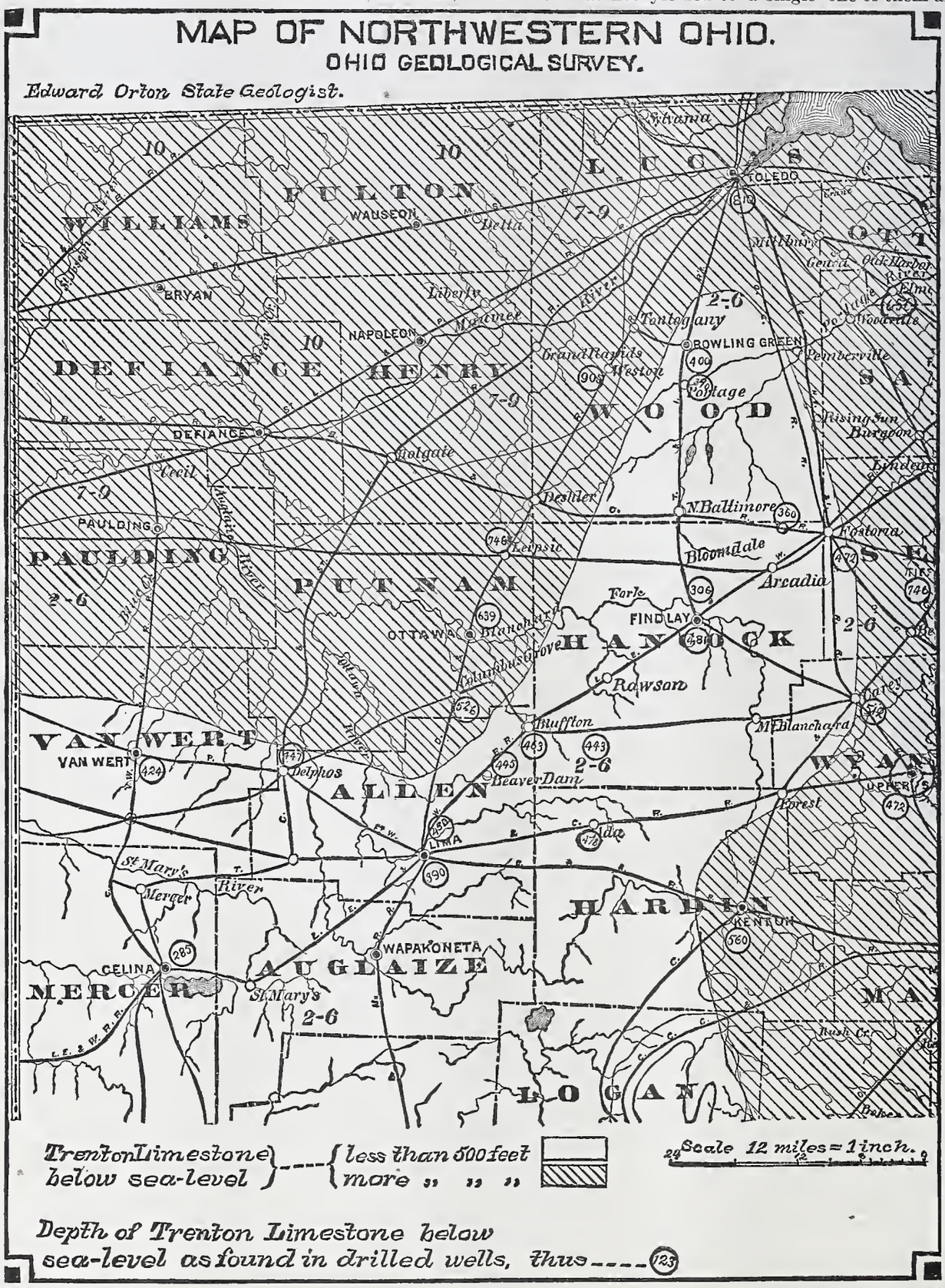
The provisional character of this conclusion is fully recognized. It will lose its validity when set aside by a new fact, but so long as it is maintained it can be made useful in limiting exploration as already suggested. Large districts are promptly condemned by this deduction. It may be charged that this is a prophesy after the fact, that only by the failure of the well can the law be extended. It is true that a certain amount of exploration must precede a valid conclusion, but the latter is by no means limited to the particular districts in which the exploration is carried on. Take for example, the drilling that has gone forward in towns on the Dayton & Michigan Railroad, north of Lima. In the well drilled at Columbus Grove, the Trenton was struck at 526 feet below sea level; in the Ottawa wells, at 639 feet; in the Leipsic well, at 701 feet, and in the Weston well, at 905 feet. At Toledo, also, its surface was found 800 feet or more below the sea. Not only is further drilling in these localities discouraged by this conclusion so long as it stands unimpeached, but the geological structure of the counties to the west of this line is such as to make it certain that their condition is worse in this respect than that of the towns that have already experienced failures. That is, the Trenton limestone lies lower in them than in the regions already found barren. In Van Wert county, however, west of Lima, the Trenton is found at a level more favorable, so far as this deduction is concerned. Its surface in the Van Wert well is 434 feet below the sea, and in the Delphos well, 447 feet below. Further exploration may well enough be undertaken in this region.

By the application of the same deduction, the eastern boundary of the field lies along the line of the Columbus, Hocking Valley & Toledo Railroad. Wells have been drilled on this line at Marion, Upper Sandusky, Carey, Fostoria, Bradner and Toledo. The record of the Marion well is not satisfactory. According to the current figures, the Trenton limestone here lies at about 700 feet below the sea; at Upper Sandusky, it is 470 feet below; at Carey, where it produces a moderate amount of gas, it lies 513 feet below; at Fostoria, where two dry holes have been drilled, it is 472 feet below; at Bradner, 529 feet below, and at Toledo, as previously stated, about 800 feet below sea level.

The line of elevations here given belongs, of course, to the counties already named. There is no known significance as yet, outside of these districts, in the fact that the Trenton limestone lies 300 or 400 feet below the level of the sea, so far as oil or gas production is concerned. The limestone, as already shown, rises slowly to the southward. Its upper surface reaches sea level not far from the parallel of Dayton. At Cincinnati, it is about

200 feet *above* sea level, though still buried several hundred feet deep, and in the valley of the Kentucky river, it rises to-day, having here an elevation of 500 to 600 feet above the sea. Through the northern portion of Darke county, through Shelby county, and probably through Logan, there is an arrest of the northward dip and a small reverse dip is established. The Trenton lies forty feet higher at Union City, Ind., than at Greenville, and forty feet higher at Sidney, than at Piqua. This interruption might well be expected to connect itself with oil or gas accumulation, but so far the limestone in this belt has proved entirely barren.

The deduction as to the connection between its petroliferous character and its absolute level is not, therefore, to be applied much beyond the south line of Allen county, according to present experience. It seems almost certain, however, from the latest developments, that portions of Auglaize and Hardin counties will yet be found to hold valuable stocks of oil or gas They are very closely connected with producing territory. But the result of a considerable amount of drilling done to the south of this line is certainly discouraging. At no point has the limestone been found charged with oil or gas in sufficient quantity to pay for the present or to warrant further exploration. More than twenty-five wells, distributed through thirteen counties, have been sunk to the Trenton limestone within this district, but the rock has not yielded to a single one of them any



Map of N W Ohio

adequate return in the way of light or heat. At Cincinnati these wells do indeed furnish power, but it is water power. They have proved artesian wells, and the strong flow which they send out from the deeper courses of the Trenton is utilized in elevators. New wells are being drilled for the express purpose of securing this form of power. The deep water of these wells is quite highly mineralized, and is popularly identified with the Blue Lick water of Kentucky. Some value is attached to it as a medicinal water, at several points where it has been reached.

In the accompanying map of a number of counties of Northwestern Ohio, the areas in which the Trenton limestone is found more than 500 feet below sea level, are indicated by shading. The northwestern and northeastern boundaries are established on a larger number of facts than the remainder. In Hardin county, particularly, and also in Logan, the lines laid down have but little to rest on, and not much reliance is to be placed in them. Much of the boundary is provisional only, and when more facts are in hand the included areas will possibly be represented by an archipelago instead of by a single mass. One outlier of Trenton, less than 500 feet below sea level, is to be noted at Upper Sandusky. The surface of the rock here is reported at 472 feet below the sea.

No large production of oil or gas has been obtained in any of the shaded areas thus far, but it is not to be inferred that all of the unshaded portion is promising territory. Much of this has been already found barren by the drill. It is also to be considered fairly probable that accidents of structure like those described in Findlay may somewhere determine production in the regions that thus far we have been obliged to condemn.

It is believed that this conclusion can be applied with great profit to the regions in which drilling is going forward. The towns may still insist on making their tests, but one will perhaps suffice when the record shows the lower limestone to be at a level from which no value has yet been obtained. In fact, all new drilling for Trenton limestone oil or gas, in the shaded areas, might well enough be left in abeyance, until at least one success is registered in such territory. There are a score of wells now under contract in these clouded districts, and if their records all agree with the records already made, it will be as nearly certain as most things are that we call certain, that no new well will repay its projectors. A line showing the 400 feet levels of the Trenton would come much closer to actual production than that here represented, but for the present we must be content with rough approximations to boundaries.

5. The drilling that is now going forward, and that is likely to be continued in the western half of Ohio for some time to come, seems likely to bring little or no reward in money value to the communities that undertake it, outside of the three or four counties previously named. It makes a redistribution of a good deal of accumulated wealth, but the labor is essentially unproductive in character—that is, it does not seem likely to add to the material resources of the parties that make the outlay. There is, however, another side to the question which deserves consideration. The drilling of a deep well in the drift-covered plains of Northern Ohio is an educating agency of no mean order. The record, as the work progresses, becomes to a whole community almost like the experience of a journey into a foreign land. A new field of thought is opened, and new ideas come in at every stage. The oil and gas excitement of the last two years has done a great deal to promote the intelligence of the communities through which it has extended. To an ambitious company that has made liberal investments in the hope of gaining a prize in the lottery of petroleum production, the result here named may seem a very intangible and unsatisfactory one, but for a great many of the towns that have drilled, it is either this or nothing. The money spent in drilling to the Trenton limestone in Western Ohio during the last year makes a large aggregate, and most of it must be counted as water poured out on the ground, except for these indirect advantages which have no place in ordinary balance sheets. If such elements are not recognized, then Ohio has been a great loser by the discovery of Findlay gas and Lima oil.

It is the lottery element in petroleum production that gives to it most of its fascination. As in the search for other forms of mineral wealth, there is the possibility of getting large returns for small outlays. Science has no key with which to unlock these buried treasures in advance of exploration. No knowledge and no sagacity could have located the oil field of Lima, for example, in advance of the driller, but after a certain amount of exploration is done, deductions are often possible by which further work may be guided to some extent. This now appears to be the case in regard to the new oil horizon of Ohio. The element of chance still remains a factor, but the drilling already done suffices to show that outside of certain narrow boundaries the dice are at least loaded. Each new failure gives new validity to the interdict against drilling that the results of one year's explorations have applied to large sections of Western Ohio.

The facts here presented when candidly considered will discourage much of the promiscuous drilling that is now going forward. Especially will they discourage the drilling of second and third wells in many localities where the first well was, to all intents, a failure. The excitement that has pervaded the State is largely due to the sensational and exaggerated reports that have been sent out from the points where drilling has been done, by persons gathering news for the press. To one deriving his information from newspaper paragraphs alone, the inference would be warranted that Northwestern Ohio is one great pool of petroleum, charged with high pressure gas, and ready to flow out in streams of fabulous value wherever the drill is sunk to the rock that contains it. Much of the production, especially of gas, has been exaggerated a score of times, and some of it even hundreds of times. In one instance, a well was credited in published accounts with 385,000 feet of gas per day, where the measurement showed 1270 feet. The exaggeration is not, as a rule, intentional, but it results largely from the unfamiliar character of the facts. It will doubtless diminish as knowledge of the subjects becomes more general.

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for July, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of July		1,326,254.53
Quantity of crude petroleum at close of July	1,503,713.49	
Less sediment and surplus	144,891.19	
		1,358,822.30
Receipts during July		217,007.43
Deliveries during July—to refiners	206,785.06	
" " " to other parties	--------	206,785.06
Outstanding certificates, accepted orders, etc.		762,000 00
Credit balances		596,822.30
Total liabilities, July 31, 1886		1,358,822.30

JUNE SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of June		1,277,773.68
Quantity of crude petroleum at close of June	1,484,610.01	
Less sediment and surplus	158,355.45	
		1,326,254.53
Receipts during June		212,112.91
Deliveries during June—to refiners	186,222.79	
" " " to other parties	--------	186,222.79
Outstanding certificates, accepted orders, etc.		781,000.00
Credit balances		545,254.53
Total liabilities June 30, 1886		1,326,254.53

SUMMARY of the Statements of the National Transit Company for June and July:

	JULY. Barrels.	JUNE. Barrels.
Receipts from all sources	1,926,474.69	1,837,858.49
Deliveries	1,860,995.22	1,784,846.92
Gross stocks end of month	35,074,486.33	34,769,424.03
Sediment and surplus	3,786,676.60	3,541,439.38
Total liabilities end of month	31,287,809.73	31,227,984.65
Outstanding acceptances	25,241,961.38	24,889,259.78
Credit balances	6,045,848 35	6,338,724.87

The above "receipts from all sources" for July were made up as follows:

Runs from wells	1,851,154.12
Received from other lines	75,320.57
Total	1,926,474.69

The above "receipts from all sources" for June were made up as follows:

Runs from wells	1,784,613.38
Received from other lines	53,245.11
Total	1,837,858.49

IT would require three ordinary vessels to transport 22,000 barrels of oil across the ocean. A single tank steamer, belonging to Mr. W. A. Riedemann, takes the entire amount in a single cargo.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO JULY 31, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146.587	8,810	------	155,397	5,180
December	98,582	17,342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,353	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,546	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87,193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107.514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67,883	151,913	4,900
September	19,590	64,648	63,453	147,691	4,923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25.469	62,262	2,224
March	11,558	28,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2,484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71.459	2,305
June	10,324	18,154	33,126	61,604	2,053
July	10,731	18,050	35,976	64,757	2,089
Tot'l July 31 '86	3,572,570	2,598,754	2.166,660	8,337,984	5,369

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district to July 31, 1886. Cherry Grove has produced 3,572,570 barrels, Cooper 2,598,754, and Balltown 2,166,660 barrels. The daily average runs from the three fields during July were 2089 barrels, an increase of 36 barrels over the June figures.

The daily average runs from the Cooper and Henry's Mills section for July were 582 barrels, June 605 barrels, May 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, and for January 623 barrels.

The Balltown field had a daily average of 1161 barrels in July, 1104 barrels in June, 1376 barrels in May, 832 barrels in April, 1059 barrels in March, 1056 barrels in February, and 1063 barrels in January. Cherry Grove averaged 346 barrels in July, 344 barrels in June, 338 barrels in May, 347 barrels in April, 353 barrels in March, 305 barrels in February, and 306 barrels in January.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to July 31, 1886, inclusive, has been 8,337,984 barrels, a total daily average of 5369 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
September	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270.644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239		
April	280,005	9,333		
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
January, 1886	39,933	1,288	138,549	4,469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108.541	3,618
May	37,752	1,218	100,994	3,258
June	40,167	1,339	88,082	2,936
July	40,631	1,311	77,584	2,503

For the fifteen months ending with July 31, the Cogley oil field has produced 1,445,165 barrels of oil, a daily average of 3269 barrels. The daily average for 411 days ending June 30, was 3327 barrels. There has been a steady decline in the production of the Cogley field, since last November, in which month the maximum output was attained. The decrease since that time is 2913 barrels, that is the runs for July, 1886, are more than 50 per cent. less than the runs for November, 1885. The Thorn Creek and Baldridge runs averaged 1311 barrels a day in July, 1339 barrels June, 1218 barrels in May, 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 500 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 31st of July had produced 277,228 barrels; a daily average for 304 days of 912 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April, 915 barrels a day in May, 1262 barrels a day in June and 4038 barrels a day in July.

A COMMITTEE of 'Longshoremen has made a formal protest to the oil merchants in New York city, against the transportation of oil in bulk. It is claimed that it will throw thousands of laborers along the wharves, in the cooper shops, etc., out of employment.

THE Wheeling Natural Gas Company has fixed the rates of domestic service at Wheeling, W. Va., as follows: Cook stoves, $14 per annum; grates, $11.90 for the first, and $10.50 for each succeeding one, per year.

PROGRESS on the Buffalo Pipe Line has been delayed by the inability of manufacturers to supply the pipe.

The Refined Market.

The refined market underwent but few changes during July and these were in the direction of lower prices. Buyers were content to offer from ⅛@¼c below the ruling quotation, 7c, and in some instances quiet trading was done with such concessions on the part of the sellers. During the last week of the month quotations were marked down to 6⅞c. Stocks at London and the continental ports are gradually increasing and the exports are larger this year than last. Russian white oil is quoted in England at 4¾ to 5½ pence per gallon, but in spite of vigorous competition the American article holds its own. Reports of an agreement between Russian and American refiners for the future distribution of refined oil on the continent have been freely circulated, but lack confirmation.

In a late circular Wm. H. Samuel & Co. say:

"That a large quantity of Russian oil may be brought upon this market during the season appears likely, from the fact that there is now a large tank shipment loading for Liverpool. At the same time much will depend upon the success attending the first tank shipment. The experience of last season indicates that, notwithstanding the fair quality of Russian oil, it cannot command a very large sale, except at considerably less prices than those ruling for American oil, and it remains to be seen whether the Russian refiners will be content to accept prices that will enable their oil to be placed upon this market at sufficiently below American prices to command a large share of the trade."

Messrs. S. C. Joyce & Co. have the following in regard to the same subject:

"The fear among American refiners that a large quantity of Russian oil would be shipped here to displace American is partially dispelled; the low prices that have ruled during the past few months have successfully checked any large exports, and the total quantity of Russian oil expected is now very small. A good stock of last year's shipments of Russian oil still remains on hand, the prejudice against it not being yet removed, but with a fair trial of certificated oil it should soon find a way into daily consumption."

The Ocean Oil Company has been loading the Gluckauf, the first German tank steamer, at its docks in New York, with refined oil in bulk. It is stated that the German importers will save $300 in wharfage fees alone on this cargo of 17,000 barrels and the reduced expenses in carrying will cut out what little Russian oil trade there is in existence.

The exports of refined, crude and naphtha, from all ports, from January 1 to July 31 have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	3,115,505	5,395,664
Philadelphia	84,507,253	81,199,962
Baltimore	9 812,325	6,086,504
Perth Amboy	2,166,920	---------
Total	99,602,003	92,682,130
From New York	222,773,297	208,917,935
Total exports from United States	322,375,300	301,600,065

Refined oil for the home trade is in fair request. Quotations are 7¼c. for 110° test, 7¾ to 8c. for 120° test, 8½ to 9⅛c. for 130° test, 9c. for N. Y. State test, Standard white and 9¼ to 9½c. for 150° test, water white. Western lots of naphtha are offered at 7¼ to 7¾c. delivered in New York. The demand for refined in cases has been good, with quotations at 8⅝ to 9¾c., according to brand. The clearances for July in this class of goods to China and the East amounts to 1,028,427 cases, an increase of 181,759 cases over the same month in 1885. The total clearances up to July 31st are 8,712,919 cases, an increase of 2,468,753 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 31st of July, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	2,194,007	1,736,574
JAPAN	1,137,754	1,206,209
INDIA	2,780,026	1,990,316
JAVA, SINGAPORE, ETC.	2,601,132	1,311,067
Total July 31	8,712,919	6,244,166
Total June 30	7,684,492	5,397,498
Clearances for July	1,028,427	846,668
Clearances for June	1,419,352	1,116,314
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	8,712,919	6,244,166

REFINED QUOTATIONS FOR JULY.

	New York.	Philadelphia.	Baltimore.	London and Liverpool.	Bremen.	Antwerp.
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	7⅛	7⅛	7⅛	5⅝	6.40	16¼
2	7⅛	7⅛	7⅛	5⅝	6.40	16¼
3	7⅛	7⅛	7⅛	5⅝	6.40	16¼
4						
5						
6	7	7	7	5⅝	6.40	16¼
7	7	7	7	5⅝	6.35	16¼
8	7	7	7	5 11-16	6.40	16¼
9	7	7	7	5 11-16	6.35	16¼
10	7	7	7	5 11-16	6.35	16¼
11						
12	7	7	7	5 11-16	6.35	16¼
13	7	7	7	5 11-16	6.35	16¼
14	7	7	7	5 11-16	6.35	16¼
15	7	7	7	5 11-16	6.35	16¼
16	7	7	7	5 11-16	6.35	16⅛
17	7	7	7	5 11-16	6.35	16⅛
18						
19	7	7	7	5 11-16	6.35	16⅛
20	7	7	7	5 11-16	6.35	16⅛
21	7	7	7	5 11-16	6.35	16⅛
22	7	7	7	5 11-16	6.35	16⅛
23	6⅞	6⅞	6⅞	5 11-16	6.35	16⅛
24	6⅞	6⅞	6⅞	5 11-16	6.35	16
25						
26	6⅞	6⅞	6⅞	5 11-16	6.35	16
27	6⅞	6⅞	6⅞	5 11-16	6.30	15⅞
28	6⅞	6⅞	6⅞	5 11-16	6 30	15¾
29	6⅞	6⅞	6⅞	5 11-16	6.25	15¾
30	6⅞	6⅞	6⅞	5 11-16	6.25	15¾
31	6⅞	6⅞	6⅞	5 11-16	6.25	15¾

Summary of Daily Pipe Line Runs for July and June, 1886.

The following table shows at a glance the pipe line runs for July and June and the increase or decrease from each section. The estimate for Baldridge is based upon the runs of the National Transit Company, which were 1311 barrels in July, and an approximate estimate of the Pittsburgh Pipe Line, which includes all the oil run from Butler county, under one head:

	July.	June.	Increase.	Decrease.
Allegany	6,802	6,981	----	179
Bradford	27,587	28,790	----	1,203
Cherry Grove	346	344	2	----
Balltown	1,161	1,104	57	----
Cooper	582	605	----	23
Baldridge, estimated	1,700	1,725	----	25
Kane	5,321	5,702	----	381
Grand Valley	1,481	1,074	407	----
Cogley	2,503	2,936	----	433
Tarkill	4,038	1,262	2,776	----
Red Valley	1,039	1,181	----	142
Pontius	2,273	2,350	----	77
Washington	6,568	8,022	----	1,454
Shannopin	746	272	474	----
Smith's Ferry	17	6	11	----
Mt. Nebo	6	8	----	2
Macksburg	1,884	2,139	----	255
Other fields	12,710	13,489	----	779
Total	76,764	77,990	----	1,226
Lima	1,176	795	381	----
Total with Lima	77,940	78,785	----	----

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	July, 1886. Wells.	Prod'n.	Dry.	June, 1886. Wells.	Prod'n.	Dry.
Scio	0	0	0	1	6	0
Alma	5	22	0	6	31	0
Wirt	8	50	1	8	56	0
Bolivar	1	4	0	3	16	0
Clarksville	11	72	1	10	79	0
Genesee	0	0	0	0	0	0
Miscellaneous	0	0	0	3	0	3
Total	25	148	2	31	188	3

BRADFORD FIELD.

Division of Field.	July, 1886. Wells.	Prod'n.	Dry.	June, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	9	55	0	11	66	0
Kendall Creek	1	6	0	2	18	0
Foster Brook	4	23	0	4	24	0
Knapp's Creek	1	6	0	3	15	0
Four Mile	0	0	0	1	8	0
Indian & Meeks Creeks	8	76	0	7	52	0
Cole Creek	3	35	0	6	76	0
Kinzua	2	28	0	0	0	0
Miscellaneous	1	0	1	2	3	1
Total	29	229	1	36	262	1

WARREN AND FOREST.

District.	July, 1886. Wells.	Prod n.	Dry.	June, 1886. Wells.	Prod'n.	Dry.
Glade	6	130	4	11	42	2
Clarendon	14	72	0	19	105	0
Tiona	19	114	1	30	183	0
Cooper	0	0	0	1	5	0
Balltown	5	90	0	6	155	2
Kane	62	1935	1	52	2168	3
Grand Valley	60	562	6	50	432	8
Miscellaneous	4	0	4	4	0	4
Total	170	2903	16	173	3090	19

LOWER COUNTRY.

District.	July, 1886. We ls.	Prod'n.	Dry.	June, 1886. Wells.	Prod'n.	Dry.
Venango	66	3366	11	56	2350	8
Clarion	15	126	2	18	207	1
Butler and Armstrong	33	862	7	26	786	6
Washington	10	2165	2	12	1879	6
Shoustown, Etc	10	320	5	20	265	12
Total	134	6839	27	132	5487	33

GRAND SUMMARY.

District.	July, 1886. Wells.	Prod'n.	Dry.	June, 1886. Wells.	Prod'n.	Dry.
Al egany	25	148	1	31	188	3
Bradford	29	229	2	36	262	1
Warren and Forest	170	2903	16	173	3090	19
Lower Field	134	6839	27	132	5487	33
Total July	358	10119	46	372	9027	56
Total June	372	9027	56			
Difference	14	1192	10			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	July 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Scio	0	4	1	5	0	4	0	4
Alma	1	9	3	13	0	10	4	14
Wirt	3	8	6	17	7	8	8	23
Bolivar	0	4	0	4	0	4	1	5
Genesee	0	9	0	9	0	11	0	11
Clarksville	4	6	7	17	6	7	11	24
Miscellaneous	0	0	1	1	0	0	0	0
Total	8	40	18	66	13	44	24	81

BRADFORD FIELD.

Division of Field.	July 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
E. and W. Branches	4	10	9	23	3	10	11	24
Kendall Creek	0	0	2	2	0	1	1	2
Knapp's Creek	1	7	2	10	0	7	3	10
Foster Brook	1	6	3	10	4	6	2	12
Four Mile	1	3	0	4	0	3	0	3
Indian Creek	5	5	3	13	5	5	7	17
Cole Creek	1	4	3	8	1	4	3	8
Kinzua	2	0	2	4	1	0	2	3
Miscellaneous	1	0	2	3	1	0	0	1
Total	16	35	26	77	15	36	29	80

WARREN AND FOREST.

Division of Field.	July 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	3	2	4	9	2	2	7	11
Clarendon	6	5	11	22	8	5	13	26
Tiona	8	6	11	25	9	7	16	32
Cooper	0	2	0	2	0	2	0	2
Balltown	1	2	4	7	2	2	6	10
Kane	11	2	46	59	17	2	65	84
Grand Valley	35	0	28	63	31	1	33	65
Miscellaneous	6	0	7	13	3	0	5	8
Total	70	19	111	200	72	21	145	238

LOWER COUNTRY.

Division of Field.	July 31, 1886 New Rigs.	Old Rigs.	Drilling.	Total.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	25	17	53	95	42	9	43	94
Clarion	9	10	13	32	14	11	12	37
Butler & Armstrong	22	6	51	79	20	5	48	73
Washington	9	10	84	103	11	7	80	98
Shoustown, Etc	11	9	21	41	11	10	21	42
Total	76	52	222	350	98	42	204	344

GRAND SUMMARY.

Field.	July 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	June 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	8	40	18	66	13	44	24	81
Bradford	16	35	26	77	15	36	29	80
Warren and Forest	70	19	111	200	72	21	145	238
Low r Country	76	52	222	350	98	42	204	344
Total	170	146	377	693	198	143	402	743
Total June 30	198	143	402	743				
Difference	28	3	25	50				

July Production Report.

Reports of the stocks on hand at 6273 Bradford wells showed an average decrease of 1.2 barrels to the well during July:

Time.	No. Wells.	Gross Stocks.	Average per well.
July 1, 1886	6,275	279,317	44 5
August 1, 1886	6,273	271,651	43.3
Difference	2	7,666	1.2

The number of wells in the Bradford field connected with the pipe lines on the first of July is estimated at 13,976. Estimating the entire Bradford region on the basis of 1.2 barrels decrease, the total decrease in stocks at wells during July was 16,771 barrels, a daily average of 541 barrels. Subtracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for July is as follows:

	Barrels.
Average Daily Pipe Line Runs	27,587
Average Daily Decrease of Stocks at Wells	541
Bradford's July Production, estimated	27,046
" June " "	27,860
Average Daily Decrease	814

THE ALLEGANY FIELD.

Stocks from 951 wells in the Allegany field show an average decrease of three and four-tenth barrels to the well, during July. With 4120 wells in the field on the first of August, the total decrease in stocks amounts to 14,008 barrels, a daily average decrease of 452 barrels for the month of July. Subtracting this decrease from the pipe line runs, 6802 barrels, the remainder 6350 represents Allegany's daily yield for July. The estimated production for June was 6554 barrels a day.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the dif-

ferent sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells July 1.	No. Wells Aug. 1.	Average per well July 1.	Average per well Aug. 1.
Clarendon and Tiona	202	204	22	21
Cherry Grove	22	22	43	41
Cooper District	125	125	36	39
Lower Country	147	148	66	69
Miscellaneous	165	146	109	94

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for July and June is as follows:

Field.	July. Barrels.	June. Barrels.
Bradford	27,046	27,860
Allegany	6,350	6,554
Outside Runs	40,491	40,040
Total	73,887	74,454

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, had a daily average production of 2016 barrels in July, 2275 barrels in June, 2104 barrels in May, 2401 barrels in April and 2186 barrels in March.

The production of all fields, including Macksburg and Lima, would sum up as follows:

Field.	July. Barrels.	June. Barrels.
New York and Pennsylvania oil regions	73,387	74,454
Macksburg	2,016	2,275
Lima	1,176	795
Total	76,579	77,524
Decrease in July (all fields)		945

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,763	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19.162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18 330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63.876	67,981
November	31,789	35,026	8.642	12,678	23,557	18,433	63.988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32,378	7,196	11,607	19,800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55.505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10 384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63 876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,627
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,583	27,051	6,651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59,764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505
June	27,860	29,272	6,554	7,463	40,040	21,559	74,454	58,294
July	27.046	30,309	6,350	7,139	40,491	19,273	73,887	56,721

THE Pennsylvania Gas Company has located a line from its Hodgen well into Cannonsburg. It expects to supply natural gas at lower rates than those charged by the old company.

JUDGE McPHERSON has decided that refining oil is manufacturing, and that oil refineries in this State are exempted from all taxes on their capital stock.

BLUE print maps of the Ohio oil fields to be had at the AGE office, price two dollars each.

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	JULY, 1886.	JUNE, 1886.
National Transit Co	1,851,154 12	1,784,613.38
Tidewater	217,007.43	212,112.91
Octave Oil Co	3,387.32	3,058.00
Shaffer Run	364.50	364.50
Franklin (limited)	6,598.30	6,609.46
Pittsburgh Pipe Line	47,110.77	23.097.30
Southwest Pennsylvania	195,667.56	244,470.06
Total	2,231,290.00	2,274,325.61
Daily average	74,880.32	75,810.85

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	JULY, 1886.	JUNE, 1886.
National Transit Co	1,860,995.22	1,784,846.92
Tidewater	206,785.06	186,222 79
Octave Oil Co	3,473 62	3,142.26
Shaffer Run	.....	.....
Franklin (limited)	6,680.80	5,015.98
Pittsburgh Pipe Line	47,110.77	23,097.30
Southwest Pennsylvania	99,291.87	128,168.10
Total	2,224,337.34	2,130,523.35
Daily average shipments	71,752.81	71,017.44

In the above shipments only the oil delivered to refiners is included.

Daily excess of runs over shipments, July	3,127.51
Daily excess of runs over shipments, June	4,793.41
Daily excess of runs over shipments, May	3,967.06
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August	11,099.01
Daily excess of shipments over runs, July	5,959.01
Daily excess of shipments over runs, June	7,992.05
Daily excess of shipments over runs, May, 1885	10,502.60

NET STOCKS.

PIPE LINE.	JULY 31, 1886.	JUNE 30, 1886.
National Transit Co	31,287,809.73	31,227,984.65
Tidewater	1,358,822.30	1,326,254.53
Octave Oil Co	3,292 80	3,468 21
Shaffer Run	23,031.64	23,031 64
Franklin (limited)	45,824.29	45,906.80
Pittsburgh Pipe Line	.....	.....
Southwest Pennsylvania	342,038.65	245,662.96
Total	33,060,819.41	32,872,308.79

Stocks increased July	188,510 62
Stocks increased June	216,583.97
Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174 57
Stocks decreased February	436,146 69
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October	184,393 91
Stocks decreased September	408,862.12
Stocks decreased August	390,529 99
Stocks decreased July	215,947.71
Stocks decreased June	356,849 49
Stocks decreased May	565,252.48
Stocks decreased April, 1885	42,525.72

	RECEIPTS.	DELIVERIES.
Daily average July	74,880	71,753
Daily average June	75,811	71,017
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,124
Daily average September	58,067	71,206
Daily average August	55,001	66,100
Daily average July	57,293	63,252
Daily average June	59,901	67,893
Daily average May, 1885	57 135	67,637

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

AT Oil City, Thursday, August 5th, a committee consisting of Frank Tack, Vice-President of the New York Consolidated Petroleum Exchange: C. L. Wheeler, President of the Bradford Exchange, and President H. L. Foster, of the Oil City Exchange, had a conference with Daniel O'Day, John R. Campbell, Joseph Seep and W. T. Scheide, in reference to a change of storage rates. The committee asked a reduction on the ground of the very low price of oil, reduction of the cost of tank construction and lessening of other expenses of the lines. Mr. O'Day and his colleagues were in favor of the desired reduction No definite action was taken in the matter, but the request of the trade will be submitted to the National Transit officials in New York early next week.

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	July 24, 1886. Barrels.	June 19, 1886. Barrels.
Seven Continental Ports	1,279,272	1,105,421
London	207,909	199,664
Trieste	------	------
Total Stocks afloat and ashore	1,487,181	1,305,085
Increase in stocks since June 19	182,096	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS JULY 24, 1886.

PORTS.	Stocks week ending July 24.		Stocks afloat week ending July 24.		Loading. Week ending July 24.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	107,981	176,745	20,840	6,164	51,800	25,000	180,621	207,909	36,626	14,800	15,841	15,386
Trieste	11,815	------	17,336	------	5,000	----	34,151	------	------	------	1,025	------
Bremen	473,088	218,162	13,397	21,960	23,000	63,500	509,485	303,622	50,706	29,052	25,688	22,266
Hamburg	205,854	176,322	84,749	84,348	42,500	67,800	333,103	328,470	66,614	62,317	41,602	40,587
Antwerp	104,546	172,569	14,182	40,260	52,500	40,100	171,228	252,929	23,991	38,918	26,405	27,049
Rotterdam	86,137	104,094	31,386	40,949	------	26,100	117,523	171,143	31,340	38,721	14,209	16,596
Amsterdam	46,304	56,447	19,175	34,886	8,000	2,500	73,479	93,833	26,504	45	7,571	11,076
Stettin	93,927	57,689	77,673	30,955	------	23,200	171,600	111,844	48,874	50,138	13,359	9,242
Danzig	23,392	9,060	11,676	6,371	4,000	2,000	39,068	17,431	15,926	------	1,270	1,017
Total	1,033,248	794,343	252,238	259,729	130,000	225,200	1,415,486	1,279,272	263,955	219,191	130,095	127,833

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,791,069	1,575,344	1,033,248	794,343
Total afloat, " "	143,919	123,398	252,238	259,729
Total loading	151,800	182,300	130,000	225,200
Total	2,086,788	1,881,042	1,415,486	1,279,272
Afloat and loading for direct Continental Ports	------	20,000	17,700	9,100
" " " Baltic Sea, exclusive Stettin and Danzig	20,200	7,900	36,300	50,100
" " " Total Continental Ports	2,106,988	1,908,942	1,469,486	1,338,472
" " " Total London	490,576	255,570	180,621	207,909
" " " English harbors, exclusive London	115,700	53,000	50,800	61,000
Grand total	2,713,264	2,217,512	1,700,907	1,607,381

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, JUNE, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., JULY 10, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS.		ILLUMINATING.		LUBRICATING & PARAFINE OILS.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	------	------	------	------	1,080,186	95,839	5,942	1,687	------	------	1,086,128	97,526
New York, N. Y	3,437,992	238,498	489,081	44,993	33,460,177	2,688,872	995,471	205 185	294	32	38,383,015	3,177,580
Philadelphia, Pa	3,028,555	189,276	468,194	37,238	12,741,843	994,515	37,354	6,575	----	------	16,275,946	1,227,604
Baltimore, Md	25,895	1,618	------	------	688,208	45,451	------	------	261,828	14,657	975,931	65,726
San Francisco, Cal	------	------	------	------	------	------	------	------	------	------	------	------
All other districts	------	------	------	------	------	------	------	------	------	------	------	------
Total for June, 1886	6,492,442	429,392	957,275	82,231	47,970,414	3,828,677	1,038,767	213,447	262,122	14,689	56,721,020	4,568,436
Total for June, 1885	5,435,742	388,574	1,023,659	86,816	45,389,118	3,917,630	1,099,470	206,844	629,370	36,121	53,577,359	4,635,985
Total for 12 months ending June 30 1886	80,033,856	5,843,291	12,106,229	964,241	463,931,634	40,050,203	12,188,156	2,432,320	3,223,500	188,594	571,483,375	49,478,649
Total for 12 months ending June 30, 1885	81,037,148	5,903,723	15,712,893	1,250,900	455,802,592	39,733,711	12,895,803	2 599,831	6,559,140	373,785	572,007,576	49,861,950

CRUDE QUOTATIONS FOR JULY, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
T 1	68	68⅛	66¾	66⅞	68	68⅛	66¾	66⅞	68¼	68¼	66¾	66⅞	67⅞	68	66¾	66⅞
F 2	66⅞	67	65⅝	66⅛	66⅞	67	65½	66	66¾	67	65⅝	66	66¾	67	65⅝	66
S 3	66	66⅜	65½	66¼	66	66½	65½	66⅜	66⅛	66½	65⅝	66⅛	66¼	66½	65½	66¼
M 5 Holiday.																
T 6	66¼	66⅜	65⅝	65⅝	66½	66½	65⅝	65⅝	66½	66½	65⅝	65¾	66¼	66⅜	65⅝	65⅝
W 7	65¾	65¾	65⅛	65¾	65¾	65⅞	65	65⅞	65¾	65¾	65	65¾	65½	65¾	65	65⅝
T 8	65⅞	63¾	65	65⅛	66	66¾	65⅛	65⅛	66⅛	66⅞	65⅛	65¼	65⅞	66¾	65⅛	65⅛
F 9	65¼	65½	64¾	64⅞	65¼	65⅝	64¾	64⅞	65⅜	65⅝	64¾	64⅞	65⅜	65½	64¾	64⅞
S 10	64¾	65¼	64⅝	64⅞	64¾	65¼	64⅝	64⅞	64¾	65¼	64⅝	65	64⅜	65¼	64⅜	64⅞
M 12	65	66¼	65	66⅛	65⅛	66¼	65	66⅛	65	66¼	64⅞	66⅛	65	66¼	65	66⅛
T 13	66¼	66¼	65⅝	66	66¼	66¼	65⅝	66	66¼	66¼	65½	66	66⅛	66¼	65½	65⅞
W 14	66	66¼	65½	65½	66	66⅜	65⅜	65½	66	66⅜	65½	65½	65⅞	66⅜	65½	65½
T 15	65⅝	66½	65½	66½	65¾	66⅝	65½	66⅝	65½	66⅝	65½	66⅝	65¾	66⅝	65½	66½
F 16	66¾	67¼	65⅞	65⅞	67	67¼	65⅞	66	67	67¼	65⅞	66	66¾	67⅛	65⅛	66
S 17	66⅛	66⅜	65¾	66	66¼	66¼	65⅛	66	66⅛	66⅜	65⅝	66⅛	66⅛	66⅜	65¾	66⅛
M 19	66¼	66¾	66¼	66⅜	66¼	66⅞	66¼	66⅜	66⅜	66⅞	66⅛	66⅜	66⅜	66⅞	66⅛	66¼
T 20	66½	68	66½	67⅞	66⅜	68	66⅜	67⅞	66½	68	66⅜	67⅞	66½	68	66½	67⅞
W 21	66¾	66¾	65¾	65¾	66¾	67	65¾	65¾	67	67	65⅝	65¾	67	67	65¾	65¾
T 22	65½	66⅛	65½	66	65¾	66⅛	65⅜	66	65⅝	66⅛	65½	66	65½	66⅛	65½	66
F 23	66¼	66⅜	66	66⅛	66¼	66½	66⅛	66⅛	66¼	66½	66	66	66⅛	66½	66	66⅛
S 24	65¾	66⅝	65¾	66⅜	66	66⅝	65⅞	66¾	66⅛	66⅝	65⅞	66⅜	66¼	66⅝	66	66⅜
M 26	66¼	66⅜	66	66	66⅜	66½	66⅛	66⅛	66⅜	66½	66⅛	66⅛	66⅜	66½	66⅛	66¼
T 27	66	66⅝	65	65¾	66¼	66¾	64⅞	65¾	66	66¾	65	65⅞	65¾	66¾	65	65¾
W 28	65⅞	66	65⅜	65⅜	65⅞	66	65¼	65½	66¼	66¼	65¼	65½	65⅞	66⅛	65⅜	65½
T 29	65½	66¼	65½	66¾	65¾	66⅜	65⅜	65⅞	65¾	66⅜	65½	65¾	65¾	66⅜	65½	65⅞
F 30	66	66⅜	65⅞	65⅞	66	66½	65⅞	66	66	66½	65¾	66	66	66⅜	65⅞	66
S 31	66¼	66¼	65¾	65¾	66⅜	66⅜	65⅝	65⅝	66⅛	66⅜	65⅝	65⅞	66¼	66¼	65¾	65¾

SOMETHING ABOUT SUCKER RODS.

THE ordinary sucker rod is a plain, unpretending affair, of simple construction and design, yet it plays an important part in the history of an oil development and in most fields, is the mainstay of the production. For many years wood has been the favorite material of which sucker rods have been manufactured, rigid iron and steel, apparently affording difficulties which made them unavailable for use in raising the crude product from its almost inaccessible depths below.

Almost the first rods to be used were iron tubes from ¼ to 1 inch in diameter, which screwed together in the usual manner, were employed to raise and close the working valves at the bottom of the well. But, save for shallow wells, these tubes were practically of little value, and were soon displaced by the wooden rods, which, though more cumbersome, were of considerable elasticity and more easily managed. Various mechanical devices are in vogue for connecting a string of wooden rods together, and making it a continous whole, but the constant wear, and the difficulties in the way of breakages, etc., made the wooden rod far from the perfect instrument which the producer desired, and which the inventor labored to supply. But it was not until the advent of Mr. J. M. Davidson's twisted steel rod, that the problem first begun really to be solved. But two small defects in the first rods of this kind that were manufactured made the producers rather chary in their use, and these defects the wooden rod manufacturers were not slow in enlarging upon. Among the first investors in the steel sucker rods, was Mr. John Cochran, who ordered thirteen strings for his pumping wells in the Allegany field. Mr. Cochran besides being an oil producer of long experience, is also a practical mechanic, who has gained a knowledge of tools and machinery in the workshop and at the forge. He was quick to perceive the points for improvement in the new rod, and his mind was at once bent upon overcoming defects. The steel rod was a great improvement on the old wooden rod, but it would occasionally break at the point of welding, just above or below the joint, and it had a bad habit of catching at any little obstruction in the tubing. Mr. Cochran speedily mastered these imperfections, and when the manufacturers of the rod went out of business, he purchased the original patents and the entire plant, goodwill, etc., of the old manufacturing establishment. He is now engaged in the manufacture of the perfected rod at his shops at the foot of Chestnut street, in Bradford, Pa.

The twisted steel rods as now made are in uniform lengths of twenty-five feet; their diameter in the centre is five-sixteenths of an inch; from the centre four wings project, making a completed rod, star shaped in form, and one inch in diameter when made for inch and quarter tubing, and one and one-eighth inches for the customary two inch tubing. The greatest care is exercised in their manufacture, and the point of welding, where the box or pin is attached to the rod, is now the strongest part. The boxes and pins are now made with rounded shoulders, instead of square, and the old trick of hanging to projections is entirely obviated. The twist to the rods, besides rendering additional strength and stiffness, makes them very serviceable in overcoming all difficulties that may result from paraffine in the wells. The rods have been thoroughly tested at Platt & Hunt's testing laboratory, Pittsburgh, and certified to have a tensile strength of 8000 and a breaking point at 14,600 pounds. A later test shows an improvement on the above figures, making the tensile strength 11,000 and the breaking point 15,800 pounds. Thus they are practically indestructible and will last a lifetime. Weighing less than one pound to the foot, they are lighter than the wooden rods, and in every other respect superior.

In case a rod breaks, the assistance of a very compact and ingenious little fishing tool, makes it the easiest rod in the market to fish out of the tubing.

Mr. Cochran is meeting with increased demands for the improved rods, and they are proving eminently satisfactory to all who have them in use. The prices very nearly correspond with the rates on wooden rods, and the slight increase in cost is more than made good by convenience and greater length of service, so that practically they are the most economical rod manufactured.

Natural Gas in Potteries.

The first discovery of natural gas in the neighborhood of East Liverpool, O., which locality is noted for its manufacture of pottery, was in 1860, while drilling for oil. Gas was found at several places in the vicinity about the same time. At Jethro, a locality within the town limits of East Liverpool, two gas wells were struck, one on Ball's Island, in the Ohio river, opposite the east end of the town, one on McKinnon farm, east of the Cleveland railroad depot, one on the Virginia shore, directly across the river from this depot, and several others of but little note. The gas was struck at 400 or 600 feet from the surface.

The Jethro well produced strong salt water in abundance, which was thrown out in large volume by the pressure of the gas. A short time after the well was struck, evaporating pans were put up and the gas utilized in evaporating the salt water, which was also thrown out of the well by its pressure. Shortly after this utilization of the gas at the Jethro well, the gas from another well, at Little Beaver Bridge, four miles east of East Liverpool, and near the Pennsylvania State line, was utilized in the same way. It appears from this, therefore, that as early as 1860 natural gas was used in evaporating salt in the East Liverpool district.

In October, 1873, Mr. Homer Laughlin sunk a well at his pottery within the town limits, this being the first well bored especially for natural gas. Its product was also the first gas utilized in the East Liverpool region for fuel and light, with the exception of the gas from the two wells above mentioned, which was utilized in salt manufacture. Two years later, or in 1875, other parties in East Liverpool bored wells, the gas from which was also used for fuel and light.

These wells, however, have never been large producers, and have only furnished gas for light and fuel for small fires. Some years ago, at a time when a number of wells had been freshly bored, the gas from them was used in firing a very few kilns of ware, a large number of the best wells, owned by different parties, being coupled or connected together.

The supplies from these old wells have been gradually falling off, until at present the entire product will only furnish gas sufficient for light and fuel for a few stoves and house fires. Recently, however, a very productive gas territory has been opened, some six miles south of East Liverpool, in West Virginia, the gas from which has just been piped to this town, and is being used in the potteries for all purposes for fuel and light. At the present time it is the only fuel used in these establishments.—*Ex.*

PETROLEUM PRODUCTS.

THE MARKET FOR REFINED AND LUBRICATING OILS AND REFINERS' SUPPLIES, AUGUST 17, 1886.

[Reported expressly for THE PETROLEUM AGE.]

REVIEW OF THE NEW YORK MARKET.

July is the month when business men usually seek relaxation from the ordinary cares and perplexities and consequently there is less effort to "push things" than during other seasons. The reason for this is that July is ordinarily the dullest month in the year and merchants know that extraordinary efforts during this month result in waste of energy and capital. Following the national holiday, therefore, there is a general relaxation of effort, the salesmen are withdrawn from "the road" and the annual vacations commence. This year there has been no change from this course, the month has proven as dull as was expected and half the houses visited show the clerical force reduced and some of the principals "in the country;" in fact it is difficult to find a house with the full force on hand. Trade has not been duller than was expected; indeed, some dealers report a better demand for oils than was looked for, and the indications for an early opening of the fall trade are claimed to be of the most encouraging character. The adjustment of the vexatious and costly labor troubles doubtless accounts for this feeling. There is also a settled conviction that values on most oils have touched low water mark and some have already shown the effects of this improved confidence in a more or less decided tendency to higher values, while the changes that have taken place have nearly all been in favor of holders. This, however, does not apply to petroleum products, which are in about the same unsettled and unsatisfactory condition recorded last month, though the outlook for the early fall is considered somewhat more promising.

ANIMAL AND FISH OILS.

Cod.—As we stated in our last review the "outside" parcels of domestic have nearly all been taken, but the regular dealers have come to the determination to keep control of the market and have offered to meet the price made by any one offering oil on this market. This determination has caused a still further drop in prices, and some of the best oil on this market for years has been sacrificed within the past fortnight for 30c. This is now the best figure that can be obtained for a fair sized lot, though small parcels, say five barrels, realize 32c. It is now six weeks since the market dropped to 32@34c. and fully ten days since sales were made at 30c., yet the local oil paper continues to quote the market at 34@38c. This may be in the interest of some jobbers or neglect—probably the latter. There is considerable competition, but it is believed that the "outsiders" will soon give up the struggle, as they have thus far refused to go below 30c. The quantity sold recently has not been large, notwithstanding the exceptionally low figures. Newfoundland is nominally 40c., but there would be no difficulty in placing a desirable order at 38c.

Elaine.—There has been no further change in values since the advance to 38@40c. noted in our last, the market having remained steady at these figures throughout the month. There have been sales at figures slightly varying from these quotations, not sufficient, however, to be called fluctuations in value, and a good order could readily be filled at 37½c. The demand has been light, the business doing being only a fair average summer trade. The future value of this oil depends largely upon the range of other oils and this feels the effects of a decline or rise on competing oils more promptly than do others. It is rare that the supply is not fully equal to the demand and then the price is only temporarily affected, an advance under such circumstances directing attention to substitutes.

Lard.—The market has steadily gained in strength since our last and during the past two weeks a decided advance has taken place, sales of prime being made up to 55c. At 52½ and 53c. some considerable sales were effected and with the speculative market for lard in a feverish condition pressers promptly advanced their views to 54@54½c., which, however, did not check the demand, though when 55c. was named as the lowest figure by city pressers buyers concluded to call a halt. This oil fluctuates from day to day in sympathy with the speculation in lard on the Produce Exchange and it is therefore difficult to foretell the probable course of values for even a week. Western is now quoted at 54c., but no large transactions are reported. The off grades are relatively cheap, extra No. 1 being offered at 46@47c. and No. 1 at 42c. No. 2 is entirely nominal and apparently not wanted.

Menhaden.—There is now less difference in the views of buyers and sellers than noted at the date of our last writing, probably due to the fact that buyers acknowledge the oil cannot be produced at so low a figure with profit to the manufacturers. For good merchantable 20½c. is being accepted and a few important parcels have been placed thereat. Choice light oil has realized 21½c., but the quantity offering is not large. The Eastern market appears to be somewhat stronger and about 2000 barrels are reported sold in Boston at 21@22c. as to quality. The sales here since our last foot up about 1800 barrels at the figures above, notwithstanding that our city oil paper continues to quote 21@21½c., the figures ruling a month ago. The fishing has been fair and the yield of oil is said to be 3½@4 gallons per 1000 fish. The present season will prove an unprofitable one to manufacturers and there is already talk of closing some of the factories and selling the steamers. Bleached and pressed oils have sold fairly well for the season at 26@27c. for dark pressed, 27@28c. for light pressed, 29c. for bleached spring, 30c. for bleached winter and 32c. for extra bleached winter.

Saponified.—There is not a very good demand for this oil, but as the supply is said to be only moderate holders have been able to maintain their views and claim to be making sales at 40c., though an offer to sell 200 barrels at 39c. last week did not meet with success. This oil appears for the time being to be neglected, though early in the month several transactions of fair proportions were reported, but the price was not made public and it is hinted that holders are quietly varying their price when necessary to effect sales. The quotation of 40c. may therefore be considered nominal, although for small parcels that figure is doubtless bottom.

Sperm.—The anticipated drop in the price of crude mentioned in our review of the market for June took place the latter part of July and sales were made at New Bedford at 73c., since which the market has recovered strength and subsequently sales were effected at 75c., which is at present the market price. The sales have not been large, only about 3500 barrels having been taken at 73@75c. during the month under review, and the stock is now 20,000 barrels at New Bedford and the demand very light. Holders appear to have placed their limit at 75c., several bids at 73c. having been refused. Refined has been rather quiet, only small parcels

being called for, which realize 76c. for natural spring, 80c. for bleached spring, 80c. for natural winter and 85c. for bleached winter. No further change in values is looked for in the near future.

Whale.—The advanced views of holders of crude at the date of our last do not appear to have been sustained, although they were apparently justified by the previous liberal drafts made upon the stocks. The supply has been further reduced and is now about 12,000 barrels, the sales during the month having been 1000 barrels in excess of the receipts, though the latter were light. The last sales reported at New Bedford were at 33c. for Humpback and 37c. is quoted for Arctic, but no sales are reported during the past ten days. Refined has been slow of sale and is about steady at 39c. for natural winter, 40@41c. for bleached winter, 44c. for extra bleached northern and 43c. for extra bleached southern. For large parcels these prices could be shaded ½c. by a desirable buyer.

MINERAL OILS.

Black—Summer is still the only quality called for, and the uniform quotation appears to be 6c, as the offerings by outside parties are now meagre, although there have been a few parcels offering and they have found purchasers at a slight reduction from this figure, one lot of 100 barrels being reported at 5½c. This is not a tempting figure to manufacturers and several offers to take parcels at that price have been refused. Of 30° cold test there are few offerings and fewer buyers, while the market price is nominally 7½c. The colder test oils are not wanted and prices are entirely nominal, though dealers name 8½c for 15°. It would require but small offerings from outside parties to break the present apparent firmness on summer, as the season for this grade will now soon draw to a close and the supply here is considered ample for all probable requirements.

Cylinder.—The light filtered cylinder stocks continue in good request and best known makes are taken at 16@18c, though the latter figure is difficult to obtain in this market, except, perhaps, by regular dealers, Dark filtered of 600° fire test is held at 13@15c, and lower fire test all the way down to 10c. These lower test stocks do not find much favor, but holders appear to work them off, and it is asserted that they find their way into consumption under false pretenses of higher fire test. Be this as it may, it is certainly true that the lower fire test stocks are rarely called for and generally refused, yet large quantities find their way to this market and are disposed of in some way. This may account for the very low price on the higher fire test stocks, which are thus brought in competition. Dark steam refined is hard to sell at anything like a fair figure, dealers quote 10c for jobbing parcels and a few sales of fair proportion are claimed to have been made at 8½@9c.

Neutral.—The supply of bloomless filtered oils appears to have increased and prices have been somewhat easier, 32° gravity having sold at 18c, and this now appears to be about the best figure obtainable. While the market is plentifully supplied with oils of prime quality there appears to be less of off quality and this is a benefit to all concerned. Whether this is due to improvements in manufacture, or the discovery by manufacturers that it does not pay to send the off oils to this market, we do not know, but there is certainly a decided improvement in the average quality. For 34° gravity 16c is quoted, and for 37°@38° gravity 14c. The demand has been fair, buyers apparently anticipating later wants, previous experience having taught them that the supply usually diminishes in the fall.

Paraffine.—The principal demand is, of course, for 25° gravity oil, and this is quoted at 9@10c as to manufacturer. Even 9c has been shaded, and it is stated that considerable quantities have been disposed of at 8½c for shipment to European ports. If this was done to relieve the home market of surplus stocks the move was no doubt a judicious one, but if, as hinted, it was done to keep the Russian oil out of the European markets it will fail of effect, as the Russian can be laid down in those markets at a profit at a price equivalent to 6c here. This is proven by recent offerings of Russian oil in London and Liverpool. The demand for home consumption has been fair, but buyers appear determined to depress values to the lowest fraction. For 28° gravity 7c appears to be the uniform price and sales are being made thereat, though the quantity changing hands is not large, while the supply is in excess of requirements. For 30° gravity there is very little call and the supply being also moderate, 7c is quoted and obtained. Red oils are steady and have a wide range, according to the views of manufacturers.

The following quotations are the wholesale market prices on mineral oils:

Black reduced, 29 gravity, 25@30° cold test ℔ gal	7¼	—	7¾
Black reduced, 29 gravity, 15° cold test	8½	—	8¾
Black reduced, summer	6	—	—
Cylinder, light filtered, 600° fire test	16	—	18
Cylinder, dark filtered, 600° fire test	13	—	15
Cylinder, cold test filtered	25	—	28
Cylinder, dark steam refined	8½	—	10
Franklin, natural, 32 gravity	18	—	20
Neutral filtered, 32 gravity	18	—	—
Neutral filtered, 34 gravity, bloomless	16	—	17
Neutral filtered, 37 gravity, bloomless	14	—	15
Neutral filtered, 32 gravity, wool stock	11	—	13
Paraffine, 22½ gravity	16	—	17
Paraffine, 25 gravity	9	—	10
Paraffine, 28 gravity	7	—	7½
Paraffine, 30 gravity	7	—	—
Red, 22½-23 gravity	13	—	14
Smith's Ferry, 33 gravity	7½	—	8
Smith's Ferry, 34 gravity	7	—	7¼
West Virginia, natural, 29 gravity	18	—	20

LARD, TALLOW, WAX, ETC.

Lard.—The fluctuations during the past month, though as numerous as usual, have been within a narrow range, but the general tendency has been to a higher range of values and the market may now be quoted about ½c higher than when we last wrote. This, of course, affects the price of lard oil, and that indirectly the price of other oils. The cause of the advance is attributed to large sales for export, particularly to Germany. The price may be stated at $7.00@7.25, though this may change before the ink is dry with which this paragraph is written.

Paraffine Wax.—The unsettled and unsatisfactory condition of the market noted in our last has continued throughout the month under review, but there is at present less variation, due to the fact that the market has settled down to the lowest figure of a month ago. For 126°@128° m. p. 5c is the universal asking price, and 4¾c has been accepted for several parcels, and one large parcel from out of town had to be sacrificed at 4½c. For strictly 128° m. p. 5c is doubtless bottom and although the supply is ample there is no necessity of sacrificing the wax at less. There is also some inquiry for 130° m. p., and those making would find a ready market here at a fair price—6c has been offered and 6½c could doubtless be realized for a desirable parcel. Refined is nominally quoted at 10c for 132° m. p., but 9½c will buy, and sales in a jobbing way have been made at 10c. The supply is large and the demand has not yet set in, though an active call is looked for next month.

Stearine.—The market has been featureless during the past few weeks and the variations in price but slight. The market may be said to be steady at 8c for city lard stearine, the same figure ruling when we before

reported, and oleomargarine is selling at 7@7⅛c. The sales have been very light, even for this season of the year.

Tallow.—The variations in price from day to day have been light and the extreme fluctuations during the month were within a ½c of 4c, which is about the average price represented by sales on the Produce Exchange. The past few days has shown a tendency for values to rule above 4c. The sales have at times been quite large and the firmer tone has stimulated purchases, the general impression being that the market will not again go more than a point or two below 4c.

Petrolatum.—This article continues to gain in popular favor and the consumptiou consequently is steadily increasing. The supply, however, more than keeps abreast of this increased demand, there being at preseut half a dozen manufacturers, each of whom produce an amount larger than the total cousumption of six years ago. Prices have a very wide range, according to manufacturers, and as their particular brand may be popular or unknown. The average market price, however, may be given as follows: White, 14@16c; light yellow, 10@12c; yellow, 9@10c; dark, 8@10c, and veteriuary, 8@10c. From these prices there are variations of 2@4c as to melting point, some makers producing petrolatum of three different melting points of each color grade. These prices are for ordinary parcels, large quantities, in barrels, are subject to special negotiations.

REFINERS' SUPPLIES.

Acid.—Sulphuric acid has been in fair request for prompt delivery, and some important contracts have been concluded during the past few weeks. For 66° the price quoted is $1.20 per 100 pounds, but large sales have been made at $1.10, and contracts for the oil region and other points have been made at less, probably $1.05. For 60° $1 is the average price and manufacturers refuse to shade the figure, except for a large order. Mixed acid for nitro-glycerine manufacture is quoted at 3¼c, but 3c is a full price, and there is no difficulty in placing a fair order at that figure. As there is no mystery about the mixture it would be cheaper for buyers to make their own mixtures. For 38° nitric 5⅝@6c is quoted, as to quantity and maker.

Alkalis.—The supply of both low and high test caustic soda has been considerably reduced and holders are firmer in their views, quoting an advance of 15c for 100 pounds for spot lots over sales for September delivery, while an advance of 10c is noted over the spot prices of a month ago. The demand has been better than is usual during July and gives promise of continuance. Advices from Liverpool show a tendency to higher values in the primary markets and a further advance here is therefore uot at all unlikely. The following are the spot quotations:

Caustic Soda, 60 ℔ cent	$2 80	—2 90
Caustic Soda, 70 ℔ cent	2 50	—2 55
Caustic Soda, 74 ℔ cent	2 45	—2 50
Caustic Soda, 76 ℔ cent	2 75	—3 00

Paints.—The condition of trade generally in the paint line has been one of seasonable dullness, but the outlet of what may be called oil refiners' paints and colors has been good. Prices show no variation siuce our last, in fact the price of this class of refiners' supplies is subject to but slight change at rare iutervals, the only exception being white lead, and the price of this is kept steady by the combination of caroders. Their quotations are—7c per pound net for quantities less than 500 pounds, and 7c at sixty days, or 2½ per cent. discount for cash in fifteen days for lots of 500 pounds and over. Following are the cash prices asked for colors used by refiners:

Chrome yellow ℔ lb.	10	— 15
Prussian Blue pure	28	— 40
Prussian Blue, low grade	6½	— 10
Ultramarine Blue, imported	20	— 25
Ultramar ne Blue, domestic	10	— 15
Lead in oil	7	— —

Glue.—Business as a whole has been rather light, but the outlet to oil refiners has been fully up to the expectations for the season, while some manufacturers report an increase. Prices have undergone no change and no material change is looked for, although the sharp competition for trade may cause a slight change in buyers' favor during the coming month. Following are the quotations for average parcels:

Extra white ℔ lb.	20	— 22
Medium white	16	— 18
Medium hide	12	— 14
Low grades	6	— 10
English	14	— 18
French	14	— 20
German	10	— 12
Irish	15	— 17

The quotations on the foreign are for good qualities, low grades are to be had at 5@8c, but dear at that.

Two Sides of the Question.

The economy of crude oil as fuel is daily demonstrated at the Capital Flouring Mills, Los Angeles, Cal., with its capacity for turning out 250 barrels of flour every twenty-four hours. A box car containing two tanks of the oil as it comes from the earth at Newhall, is run up on the track to the engine room, where a pipe is attached which carries the dark substance direct to the injectors at the furnace door, when it is blown in by jets of steam, creating an intense heat which develops steam to run the 200 horse power engine at a speed of fifty-seven revolutions per minute.—*American Manufacturer.*

A damper has been throwu upon the use of petroleum oil as fuel, which, is every now and then announced, has been found "perfectly practicable." From Glasgow, the *Shipping World* says, comes evidence of an unmistakable character that oil has been tried and found wanting. The managers of the Laird line, after a long trial of oil on board one of their steamers, have decided, on purely economic grounds, to abandon it altogether as a fuel, having ascertained from practical tests extending over a considerable period, that coal is the cheaper fuel of the two. Accordingly, they have had the oil tanks taken out of their vessels, and have returned to the use of coal, notwithstanding the fact that the oil tanks and the apparatus for accomplishing complete combustion of the oil cost a considerable sum of money. There is nothing in the latest apparatus and arrangements which have been adopted in Southeastern Russia, where petroleum has been extensively used for fuel, which appears likely to expedite the adoption of liquid fuel in our mercantile marine. There is little probability of petroleum being sold in Great Britain at a price which will enable it to take the place of coal.

Oil on the Waters.

A letter has been received at the Hydrographic office, Washington City, from Captain Trant, of the steamship Venetian, which vessel recently picked up the disabled steamship Werra in mid-ocean and towed her into port. He says that on the evening of August 3d a strong W. N. W. gale prevailed, and heavy seas were breaking over the bow of the Werra, endangering the two lines and threatening the loss of the tow. Captain Trant caused an oil bag to be hung from each side of the Venetian and towed some distance astern, with the instant result of smoothing the sea about the disabled ship. The captain and officers of the Werra were gathered on the forecastle and tried to make out what the Venetian was doing to accomplish such gratifying results. The next morning signals were exchanged on the subject, the Werra reporting that after the oil bags were hung out the vessel made much better weather, not a drop of water broke on board, and the ship was in all respects more comfortable.

Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARRISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) and arriving at Olean at 10·57 a. m. Connects at Olean for Bradford.

Train leaves Buffalo at 2:00 p. m. (except Sunday) arriving at Olean at 4:35 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:30 p. m. (daily) arrives at Olean at 8:10 p. m.

Train for Buffalo leaves Olean at 5:50 (daily) and 10:47 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:15 p. m.

Afternoon train leaves Olean at 3:58 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass. and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				May 23, 1886.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun
A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.
------	------	6 22	10 51	Ar. Richburg Lv	------	8 22	2 30	------
------	------	6 17	10 45	" Bolivar "	------	8 35	2 37	------
11 00	6 00	3 55	8 58	" Olean "	7 20	11 00	5 10	3 30
9 15	4 15	2 15	7 15	Lv. Bradford Ar	9 00	12 45	6 55	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 20	3 05	8 30	Ar. .....Eldred ..... Lv.	7 10	11 35	3 35
5 00	2 38	8 12	" ....Duke Centre... "	7 28	11 53	4 01
4 05	1 20	7 15	" .....Tarport..... "	8 25	12 50	5 25
3 50	1 10	7 10	Lv. .....Bradford..... Ar.	8 30	12 55	5 35
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			May 23, 1886.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	12 45	9 40	Lv.....Kinzua.....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren .....Ar	------	11 50	6 49
5 15	------	8 50	" ..... Irvineton ..... "	------	12 05	7 05
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	------	8 45	Lv.....Pittsburgh.....Ar	------	8 25	7 40
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

July 18, 1886—Eastern Time.

			STATIONS.			
P. M.	P. M.	A. M.		A. M.	P. M.	A. M.
------	6 25	11 00	Ar. .....Buffalo.. Lv	8 00	5 05	------
9 37	------	------	" .....Rochester ..... "	------	------	7 50
------	------	------	" .....Salamanca..... "	------	------	------
		A. M.				
4 25	3 30	8 00	Lv.....Bradford..... Ar	11 00	8 00	12 30
		P. M.		P. M.		
------	------	12 55	Lv..... do .....Ar	2 15	------	------
------	------	3 26	" .....Ridgway..... "	11 40	------	------
------	------	4 55	" .....Falls Creek..... "	9 56	------	------
------	------	5 02	" ..... Dubois ..... "	9 50	------	------
				A. M.		
------	------	6 08	Ar.....Punxsutawney..Lv	8 40	------	------

☞ Thousand Mile Tickets sold at Two Cents per mile. ☜

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Sup't. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	a	b		b	a	b
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.
5 20	10 43	8 30	Ar..... Bradford.....Lv	7 05	3 35	1 00
4 38	10 03	7 50	Lv... Kinzua Junction... "	7 50	4 20	1 45
4 10	9 55	7 40	" ..... Aiken ..... "	8 03	4 28	1 53
3 56	9 41	7 26	" .....Simpson..... "	8 19	4 44	2 09
3 15	9 00	6 45	" .....Smethport.....Ar	9 00	5 25	2 50
4 29	9 54	7 40	" .....Rew City.....Lv	7 59	4 29	------
4 06	9 33	------	" ..... Rixford..... "	8 15	4 45	------
4 01	9 28	------	" .....Duke Centre..... "	8 20	4 50	------
3 44	9 11	------	" .....Eldred ..... "	8 37	5 07	------
3 27	8 54	------	" ..... Bullis Mills..... "	8 54	5 24	------
3 11	8 38	------	" .....Ceres..... "	9 10	5 40	------
2 57	8 24	------	" .... Little Genesee..... "	9 24	5 54	------
2 48	8 10	------	Ar..... Bolivar Lv	9 33	6 03	------
2 23	7 46	------	Lv..... Allentown ....., "	9 57	6 27	------
P. M.	A. M.	A. M.				
1 50	7 13	------	Lv..... Wellsville. .....Ar	10 30	7 00	------
A. M.	A. M.	P. M.	N. Y., L. E. & W. R R.			A. M.
8 40	3 15	7 45	Ar..... Hornellsville Lv	12 03	8 40	12 50
------	------	------	" .....Elmira..... "	1 27	10 20	2 15
P. M.	P. M.	A. M.				
------	------	------	" .....Binghamton..... "	2 55	12 12	3 45
9 00	6 00	9 00	Lv.....New York.....Ar	8 55	7 30	9 55

Additional train leaves Wellsville daily, except Sunday, at 4.20 p. m., arriving at Allentown at 5.05, and Bolivar at 5.40 p. m.

Additional train leaves Bolivar daily, except Sunday, at 9.40 a. m., arriving at Eldred at 11.00 a. m. and Bradford at 3.00 p. m.

Tickets for sale at the Union depot.

a—Runs daily. b—Runs daily except Sunday.

JOHN C. McKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect June 14, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo.....Lv	7 45a. m.	12 30p.m.	4 45p.m.	.....
Oak Harbor.....Ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde.....	9 23	2 03	6 18	.....
Bellevue.....	9 38	2 18	6 32	.....
Monroeville.....Lv	9 57	2 32	7 01	1 35a. m.
Norwalk.....	10 13	2 50	7 20	1 50
Wellington.....	11 03	3 45	9 00	2 32
Creston.....Ar	11 52	4 33	10 45	3 15
Orrville.....Ar	12 20p.m.	5 05	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 05	6 00a. m.	6 00
Massillon.....Ar	1 20	5 45	6 40	6 40
Massillon.....Lv	1 20	5 45	6 40	6 40
Bowerston .....Ar	3 00p.m.	7 35p.m.	9 40a, m.	9 40 a.m.
Canal Dover.....	2 38p.m.	.....	8 00a. m.	8 00 a.m.
Newcomerstown.....	3 27	.....	8 47	8 47
Cambridge.....	4 30	.....	9 45	9 45
Macksburg.....	6 10	.....	11 38	11 38
Marietta.....Ar	7 20p m.	.....	12 50p.m.	12 50p.m.

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta.....Lv	6 20a. m.	2 30p.m.	.....	.....
Macksburg.....	7 25	3 42	.....	.....
Cambridge.....	8 54	5 20	.....	.....
Newcomer-town.....	9 48	6 20	.....	.....
Canal Dover.....	10 28 a.m.	6 55p.m.	.....	.....
Bowerston	11 50 a m.	3 30p.m.	6 25 a.m.	.....
Massillon.....	1 20p.m.	8 45	8 12	.....
Orrville.....Ar	1 55	9 55	8 50	.....
Orrville.....Lv	2 00	10 15*	8 50	.....
Creston Lv	2 30	10 45	9 22	.....
Wellington	3 18	11 28	10 10	*
Norwalk.....	4 10	12 10	11 25	7 25a. m.
Monroeville.....	4 12	12 25a. m.	11 37	7 37
Bellevue	4 40	*	11 55	7 53
Clyde	4 56	.....	12 10p.m.	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo.....Ar	6 35p.m.	.....	1 55p.m.	9 45a. m.

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
5 15p.m.	11 40a.m.	Ar.....Huron.....Lv	6 25a. m.	2 05p.m.
4 30p.m.	10 45a.m.	Lv.....Norwalk..... Ar	7 15a. m.	3 00p.m.

* Daily.

This road is now open through from Toledo to Bowerstown, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE—Between Toledo, Cambridge and Marietta; Toledo and Bowerstown; Toledo and Akron, Youngstown and Pittsburgh; Chicago, Akron, Youngstown and Pittsburgh.

M. D. WOODFORD, General Manager. JAMES M. HALL, Gen'l. Pass. Agent.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JUNE 14th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
N. Y., L. E. & W. R. R		P. M.	A. M.	A. M.	A. M.
Bradford ..... Lv.	.....	2 20	.....	6 15	11 40
Mt Jewett ..... Lv.	.....	5 00	.....	7 40	12 30
Kane	.....	5 40	.....	10 46	1 20
Sheffield Junction	.....	.....	.....	11 40	2 15
Marienville	.....	.....	.....	12 20	3 02
Tylersburg	.....	.....	.....	1 00	3 48
Clarion Junction	.....	.....	7 00	1 40	4 30
Clarion	—	.....	6 30	1 15	4 05
Shippenville	23	.....	7 12	1 53	4 45
Knox	—	.....	7 30	2 08	5 00
St. Petersburg	A. M.	.....	8 20	2 48	5 40
Foxburg	5 40	.....	8 50	3 25	5 55
Parker	5 50	.....	9 00	3 42	.....
Bruin	6 08	P. M.	9 20	4 02	P. M.
Petrolia	6 18	—	9 32	4 15	—
Karns	6 22	27	9 38	4 20	9
Millerstown	6 36	—	9 55	4 38	—
St. Joe	6 50	A. M.	10 08	4 53	P. M.
Butler	7 20	8 38	10 40	5 40	1 55
Renfrew	7 41	8 55	11 00	6 00	2 11
Callery Junction	8 10	9 20	11 25	6 25	2 35
Allegheny ..... Ar.	10 30	10 30	12 40	7 35	3 58
	A. M.	A. M.	P. M.	P. M.	P M

NORTHBOUND TRAINS

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A M.	P, M	P. M.
Allegheny ..... Lv.	6 00	9 20	7 20	1 46	5 35
Callery Junction	7 30	10 40	8 34	3 07	6 50
Renfrew	7 58	11 00	8 55	3 29	7 12
Butler	8 20	11 20	9 15	3 55	7 33
St. Joe	.....	.....	9 40	4 25	8 00
Millerstown	.....	A. M.	9 55	4 38	8 14
Karns	.....	—	10 12	4 54	8 28
Petrolia	.....	20	10 16	4 58	8 32
Bruin	.....	—	10 32	5 10	8 43
Parker	.....	A. M.	10 52	5 28	9 00
Foxburg	.....	6 2[illegible]	11 25	6 00	9 10
St. Petersburg	.....	6 40	11 40	6 17	.....
Knox	.....	7 30	12 25	7 00	.....
Shippenville	.....	7 48	12 40	7 18	.....
Clarion Junction	.....	8 02	12 55	7 30	P. M.
Clarion	.....	8 25	.....	8 00	—
Tylersburg	.....	8 [illegible]9	1 30	.....	22
Marienville	.....	9 18	2 10	.....	—
Sheffield Junction	.....	10 00	2 50	.....	A. M.
Kane	.....	10 55	3 35	.....	6 30
Mt. Jewett ..... Ar.	.....	12 10	4 40	.....	7 10
Bradford ..... Ar.	.....	2 05	6 05	.....	9 15
		P. M.	P. M.	P. M.	A. M.

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.35 a. m., New Castle Accommodation 3.10 p. m., Chicago Express, with through Sleeping Car, 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAINS Nos. 23 and 26 will run daily. Nos. 18 and 17 will run daily between Butler and Allegheny. No. 23 connects at Callery Junction for Allegheny and New Castle. No. 26 gets connections from Allegheny and New Castle. All other trains run daily, except Sunday.

THOS. M. KING, General Manager.

C. W. BASSETT, General Passenger Agent.

Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT MAY 10, 1886.

[Read Down.]		Central Time.	[Read Up.]	
5 00a.m.	8 15a.m.	.....Bradford.....	6 20p.m.	11 35 a.m
5 30a.m.	10 55a m.	.....Salamanca.....	4 13p.m.	8 00 a m
6 45a.m.	11 55a m.	.....Jamestown.....	3 08p.m.	7 09 a.m
9 20a.m.	2 20p.m.	.....Meadville.....	12 50p m.	5 15 a.m
10 55a.m.	5 40p.m.	.....Youngstown.....	10 35a.m.	1 25 a.m
12 52p.m.	7 30p.m.	.....Shousetown.....	8 26a m.	11 25 p.m
1 30p m.	8 00p m.	.....Pittsburgh.....	7 45a.m.	10 45 p.m

W. C. Quincy, General Manager.

A. D. Smith, General Pass. Agent.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R.R

JUNE 20, 1886.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	7 35a.m.	3 20p.m.	7 35a.m.
Grand Valley	8 03a.m.	3 48p m.	8 01a.m.
Irvincton	8 45a.m.	4 36p.m.	8 44a.m.
Warren	8 58a.m.	4 53p.m.	8 56a.m.
Junction	9 55a.m.	5 45p.m.	9 48a.m.
Lily Dale	10 50a.m,	6 36p.m.	10 37a.m.
Dunkirk, arrive	11 25a m.	7 10p.m.	11 12a m.

Going South.	Mail. No. 1.	Express. No. 3.	Sunday. No. 5.
Dunkirk, leave	9 25a.m.	4 00p m.	2 40p.m.
Lily Dale	10 03a.m.	4 38p.m.	3 14p.m.
Junction	11 02a.m.	5 45p.m.	4 08p m.
Warren	11 55a.m.	6 44p.m.	5 06p.m.
Irvineton	12 10a.m.	7 00p.m.	5 22p.m.
Grand Valley	12 58p.m.	7 49p.m.	6 12p.m.
Titusville Ar	1 20p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p. m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily. Uniontown, 10:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m. Arrive 7:00, 9:00, 10:20 a. m., 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m. Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.

B DUNHAM, General Manager.

E. D. SMITH, Division Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after May 31st, '86, trains will leave Emporium as follows:

For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:25 a. m., and 9:05 p. m. on week days. Pullman sleeping car on the 9:05 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 10:40 a. m. week days.

For Kane and intermediate stations, 10:40 a. m. and 7:05 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.

CHAS. E. PUGH, General Manager.

SHENANGO & ALLEGHENY R. R.

TAKES EFFECT MONDAY, JUNE 14, 1886.

Trains are run by Standard Central Time (90th Meridian.)

NORTHWARD.			STATIONS.	SOUTHWARD.		
6	4	2		1	3	5
P. M.	A. M.	A. M.		A. M.	A. M.	P. M.
6 37	11 40	8 25	Ar.....Greenville.....Dp	6 07	11 10	3 20
6 27	11 30	8 15	.....Shenango.....	6 17	11 22	3 33
6 15	11 17	8 03	.....Kremis.....	6 29	11 36	3 44
6 06	11 09	7 54	.....Fredonia.....	6 37	11 45	3 52
6 00	11 04	7 49	.....Coolspring.....	6 41	11 50	3 56
5 58	11 02	7 47	.....Kerby Siding.....	6 43	11 52	3 57
5 47	10 52	7 37	.....Mercer.....	6 54	12 04	4 08
5 37	10 42	7 27	.....Pardoe.....	7 03	12 14	4 17
5 32	10 37	7 22	.....Filer.....	7 07	12 19	4 22
5 23	10 31	7 16	.....Grove City.....	7 16	12 28	4 28
5 20	10 28	7 13	.....Reed.....	7 19	12 30	4 30
5 09	10 17	7 02	.....Harrisville.....	7 30	12 43	4 41
5 05	10 13	6 58	.....Wick.....	7 34	12 47	4 45
5 00	10 08	6 53	.....Branchton.....	7 40	12 52	4 50
4 58	10 06	6 49	.....Coaltown Junction.....	7 42	12 53	4 52
4 55	10 03	6 46	.....Keisters.....	7 45	12 56	4 55
4 44	9 57	6 40	.....Hailston.....	7 52	1 03	5 02
4 34	9 47	6 32	.....Euclid.....	8 03	1 13	5 11
4 23	9 37	6 22	.....Jamisonville.....	8 12	1 22	5 19
4 15	9 30	6 15	.....Oneida.....	8 22	1 31	5 25
4 05	9 20	6 05	.....P. & W. Junction.....	8 35	1 42	5 35
4 00	9 15	6 00	.....Butler.....	8 38	1 45	5 37
			Pittsburgh & Western R. R.			
1 46	7 20	....	Dp.....Allegheny.....Ar	10 30	3 58	7 35
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.

HILLIARD BRANCH.

10	12	STATIONS.	9	11
A. M.	A. M.		A. M.	P. M.
9 55	6 45	Ar.....Branchton.....Dp	7 45	5 10
9 45	6 36	.....Bovard.....	7 50	5 15
9 15	6 16	.....Annandale.....	8 10	5 40
9 00	6 08	.....Roy.....	8 20	5 58
8 40	6 00	Dp.....Hilliard.....Ar	8 30	6 15
A. M.	A. M.		A. M.	P. M.

Trains 4 and 5 run daily with through coach service between Allegheny, Chautauqua Lake and Jamestown, N. Y. All other trains daily except Sunday.

I. D. STINSON, G. P. A., Greenville, Pa.

J. T. BLAIR, Gen. Man., Greenville, Pa.

THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., OCTOBER, 1886. No. 9.

RUSSIAN PETROLEUM.

DEPRESSED CONDITION OF THE TRADE.

Report of Vice-Consul Peacock to the British Government on the Third Petroleum Conference at Baku.

[CONTINUED FROM PAGE 1432.]

WITH regard to the seventh question, concerning the nomenclature of the petroleum products, the following classification was adopted:

1. Benzine, two sorts, viz.:

(*a.*) Light benzine, colorless, used for manufacturing india-rubber goods, and distilled at a temperature not below 130 degrees Centigrade or 266 degrees Fahrenheit.

(*b.*) Heavy benzine, of a pale yellowish color, yielding 10 per cent. refuse when distilled at a temperature as high as 150 degrees Centigrade or 302 degrees Fahrenheit.

2. Kerosene, specific gravity 0·830; two sorts:

(*a.*) Safe, flashing point not less than 25 degrees Centigrade or 77 degrees Fahrenheit.

(*b.*) Unsafe, flashing point below 25 degrees Centigrade or 77 degrees Fahrenheit.

3. Astralin, specific gravity 0·850, of a pale yellowish color; flashing point less than 50 degrees Centigrade or 122 degrees Fahrenheit.

4. Solar oil, specific gravity above 0·850, but not exceeding 0·880; flashing point not below 80 degrees Centigrade or 176 degrees Fahrenheit; may be of very pale yellowish color.

5. Lubricating oils, specific gravity from 0·880 and upwards.

6. Crude oil, specific gravity from 0·850 to 0·880; flashing point below 70 degrees Centigrade or 158 degrees Fahrenheit.

7. Mazut, or crude oil deprived of volatile light substances by exposure to air; specific gravity above 0·880; flashing point above 70 degrees Centigrade or 158 degrees Fahrenheit; and residue, locally called "astatki," flashing point not below 140 degrees Centigrade or 284 degrees Fahrenheit.

8. The different petroleum products in a solid state, asphalte, ozokerit, etc.

9. Cerezine, paraffin, vaseline.

10. The different greases, varnishes and mastics derived from petroleum.

With regard to the eighth question, it was agreed that a yearly premium of 3000 roubles should be assigned, to be awarded to the author of the best scientific work relating to petroleum and the products derived therefrom, subject to the approval of the Baku Technical Society; that a laboratory should be established for the purpose of facilitating chemical experiments, under the superintendence of the Baku Technical Society; that a school should be opened at Balakhane for training drillers and mechanics; that special inspectors should be employed for the purpose of controlling the proper use of boilers to prevent accidents. Besides, other measures were proposed and approved concerning the organization of hospitals, schools, sanitary and police regulations, construction of roads, etc.

The resolution passed with regard to the ninth question was to petition the Government that a compulsory tax should be imposed by law, the revenue thus gained to be applied for purposes of common interest concerning the petroleum industry at large; the rate of the tax to be 1-30 copeck per pood of crude oil conveyed from the wells to the Black Town, where the refineries are.

The tenth question, as to whether it was expedient that the Government should impose an excise duty on petroleum, as projected by MM. Nobel and Ragozin, was unanimously settled in the negative.

The subject of the eleventh question was the project of M. Nobel pointing out the desirability of encouraging trial borings in new petroleum territories, on terms securing special advantages in case of success to those who might feel prepared to risk capital for that purpose. In consideration of the fact that the old territories of Balakhane and Labuntchi are showing evident signs of exhaustion, the suggestion of M. Nobel was approved, but no definite resolutions could be passed in regard to the matter for want of detailed and fully satisfactory information as to the localities where, and on what terms, trial borings should be encouraged. The council of the Conference was therefore requested to furnish the requisite information. At the same time it was stipulated that localities adjoining thoroughly tested petroleum-bearing territories, as those of Balakhane and Labuntchi, should not be open to gratuitous exploration by way of trial borings.

The discussion of the twelfth question resulted in the election of a temporary committee charged with the management of affairs connected with railway transport, in conformity with regulations issued by the Minister of Ways of Communication.

Of the above mentioned manifold measures calculated to alleviate the present depression of the Baku trade, two particularly, namely, the contemplated extension of credit and the increase of the carrying capacity of the Trans-Caucasian Railway, it is deemed, are of immense practical importance.

This is the prevailing opinion at Baku, and has been repeatedly advocated in the local press. Upon closer observation, however, of the actual situation at Baku, as well as in the principal European markets, with regard to the petroleum trade, it would be found impossible to vindicate the absolute correctness of that opinion.

During the last two years means of transport have almost doubled, and railway rates, and freights on the Caspian and Black Sea, have been considerably reduced. At the same time, prices on the spot of production did not rise; on the contrary, were steadily falling, and are lower now than ever before.

Prices, again, at the different centres of distribution in Russia and in the principal European markets supplied with Baku kerosene, have fallen to such an extent that sales are being made at a loss. Fresh supplies would only glut the markets and cause a further fall in prices. It is evident, therefore, that under the circumstances there is no actual need to increase the means of transporting kerosene to markets where it is known to have depreciated, leaving no margin for profits.

As to the extension of credit, it may be remarked that it could do no good, for reasons I shall mention hereafter, to the industry and the trade at large, however welcome and necessary it may seem to people laboring at present under extraordinary pecuniary difficulties.

The reckless and wasteful manner in which operations are being carried on, regardless of considerations as to whether the enormous natural riches yearly extracted may be utilized on the spot, or profitably marketed, is notorious. The opening of additional and cheaper credit would almost certainly lead to increase of production, just the thing that could not but prove finally ruinous to producers and traders. As it is, operations are being carried on, uot on commercial principles, but by the theory of chances and gambling—and that is not what justifies any claim to credit.

In the course of the last ten years Baku has been largely supplied with capital, locally as well as from Russia and European money markets, and considerable profits were derived from the petroleum trade in former years, and it was scarcely observed for some time that the majority of drillers and refiners were fatally drifting toward a crisis, but it is now admitted that they are on the brink of insolvency.

The misfortune is ascribed to a great extent to want of cash, accompanied by stringency of credit, which, in fact, is but the effect, not the cause, of the anomalous conditions and unprofitableness of the petroleum trade in its present state of development.

The different remedies devised by the three Conferences are no more than palliatives.

It is the discovery of the prevailing cardinal cause of the unhealthy state of affairs, which somehow is being persistently ignored or purposely left under the shade of personal petty grievances, that alone might throw a true light on the question as to by which means the present difficulties may be overcome, and the industry saved from retrenchment or collapse.

The most striking characteristic of the Trans-Caucasian petroleum industry is its inordinate concentration on one spot, that is, at Baku.

There always has been, and continues to be so, a jealousy on the part of Baku of any efforts with the view of conveying crude oil for refining purposes to other localities in the Caucasus, and particularly to the ports of the Black Sea open to foreign countries.

Any schemes for conveying crude oil westward were considered as measures destructive and ruinous to the future prospects of the Baku petroleum industry. Time has proved the contrary. The yield of crude oil is much more than what can be profitably turned to account on the spot. A sort of plethora and congestion at the very sources of production is what oppresses and paralyzes the whole industrial community, and vitiates, as it were, the feeding capacity and vital force of the product.

To relax this state of affairs there can be no other really effective measure than the opening of a new channel for conveying crude oil, not kerosene, and leading to such places where the product could be utilized on a larger scale and more profitably than at Baku; and it is by realizing the much discussed project of a pipe line from the Caspian to the Black Sea that such a channel might be opened. It would cause an inevitable rise in prices for crude oil, as well as kerosene, at Baku, by creating new demand for the former product and confining the production of the latter within the limits of markets of certain regions that naturally must continue to be supplied direct from Baku, as the eastern districts of Russia along the Volga, Trans-Caucasia on the other side of the Suram range, and Persia.

The pipe line would at the same time lead to the organization of industrial establishments in the interior, and particularly so at the ports of this coast.

The apprehension that, by allowing the crude oil to be taken in large quantities to the ports of the Black Sea, the different Baku factories and the Caspian fleet might be deprived of the necessary quantities of residue now generally used for heating purposes, is from a commercial point of view untenable.

The residue fetches at present a nominal price of two copecks per pood, but large quantities of that product are actually wasted or disposed of at any price at a loss to producers.

Surely no local industries or shipping can safely be supported for any length of time at the cost of a non-paying production, and at the sacrifice of a commerce involving interests of the country at large.

It must be borne in mind that the Baku crude oil yields but from 25 to 33 per cent. of kerosene, the staple article of export, and that above 60 per cent. is almost gratuitously burnt or wasted. Affairs, if properly managed, would naturally take a different turn on this coast. Kerosene could with greater facilities and much more extensively reach the distant markets of the world; and as to the remaining 60 or 70 per cent. of the product, there could be no room for waste or unprofitable sales. Every particle of the various products, not excepting residue as fuel, could be more fully utilized at the ports of the Black Sea standing in direct communication with the principal shipping places of the world than at a comparatively isolated place like Baku.

It may not be out of place to mention here the class of people who are actually hostile to the laying of a pipe line; most Baku refiners, especially those who have invested considerable capital in steamboats, tank cars, reservoirs, etc., for transport on the line by the Caspian, the Volga, and from Tsaritsin by rail to the ports of the Baltic and other places, the different shipping companies of the Caspian Sea, and the Trans-Caucasian Railway Company.

All well owners and producers of crude oil having no refineries are in favor of the scheme, and so are a great many unbiased traders and local official authorities.

At all events, the Trans-Caucasian pipe line can only be a question of time, for before long the growing depression of the Baku petroleum trade will imperatively demand the realization of the scheme.

Next to the pipe line, the probable realization of which in a near future promises to bring about a wonderful change in the trade for the best, deserves to be particularly mentioned a circumstance likely to affect the very people actually engaged in the trade.

No one can doubt that the Baku petroleum industry, and the trade it has created, are not of an ephemeral nature; but one cannot help questioning as to how long yet most of the people into whose hands the business has happened to fall will be able to hold their own under the existing conditions of helpless indebtedness.

The different works and establishments representing

so enormous a capital, but being actually a drag upon the owners, it seems but probable must eventually pass over into better hands.

The property and works of one of the largest firms, the Caspian and Black Sea Petroleum Company, were recently sold to Rothschild, of Paris; and there are not a few other Baku firms who would be only too glad to sell out.

Without attempting to foreshadow as to when and how the realization of the projected pipe line, and the transfer of a great share in the petroleum industry to financially superior hands, are likely to take place, I ventured to make the above remarks, presuming they deserve to be borne in mind by capitalists and merchants seeking for new fields of enterprise.

For the guidance of those who may feel inclined to invest in the Trans-Caucasian petroleum business, I beg to add the following information and data relating to the actual state of affairs in question.

It is a noteworthy fact that the enormous increase during the last ten years of the number of wells sunk near Baku has scarcely at all been accompanied by anything like a corresponding extension of the area of the territory where drilling operations are being carried on. Since 1876 above 300 wells have been added, and the yearly production of crude oil has increased from 6,000,000 to 115,000,000 poods, or from 30,000,000 to 575,000,000 gallons; and this remarkable increase has been effected on the same old territories, that were known centuries ago, viz., Bebi-Ebad, Balakhane and Labuntchi, and Surakhane, at a distance respectively of from three to nine miles from Baku, and of a total area not exceeding 1200 acres.

No serious efforts have been made yet to extend drilling operations to new territories, nor seems there to be any pressing necessity for doing so, considering the more than sufficient yield of petroleum on the spot actually occupied. For the sake of speculation, rather than from commercial necessity, some wells had been sunk near Khidirzindi, Benagadi, Kergez, Aliata, and other localities at a more or less considerable distance from the old territories, without leading to any practical results. At present a well is being sunk at Zikh, and although a depth of about 2000 feet has been reached, there are no signs of oil.

A few desultory wells sunk at random can scarcely serve as criterion of the potential capacity of new territories. But it cannot be doubted that there are other tracts of oil-bearing territories besides those already known as productive, and that when the necessity will present itself, such tracts are sure to be found along the coast of the Caspian on a broken line of about 60 miles stretching from Besh-Permak to Aliata, and intersecting the Peninsula of Apsheron.

It is important to notice that for the present the Russian petroleum trade depends entirely on the above mentioned old territories of a very limited area.

The repeatedly tested petroleum region of the Kouban yields scarcely 1 per cent. of what the total production of Baku amounts to; as to the much boasted petroleum riches of the Trans-Caspian deserts, it must be said that the apparently most promising part of that territory, the Nephtenaga Gora (Petroleum Mountain), some 18 miles from the station Balla-Ishem, gives but a few hundred gallons of crude oil per day, and the engines of the military Trans-Caspian Railway are being heated chiefly with liquid fuel supplied from Baku.

With regard again to the future prospects of the actually worked territory near Baku, the fact should not be ignored that the level of the subterranean petroleum deposits of that territory is steadily lowering at the rate of about 50 feet for every 500,000,000 gallons of crude oil extracted.

The average depth of productive wells some ten years ago was 200 feet, it is now about 500 feet.

How deep the petroleum-bearing strata underlie, and to what depth it will be technically possible and commercially profitable to carry the borings, are questions involving no little interest with regard to the future prospects of the Baku petroleum trade.

The following sums were paid for the petroleum lands surrounding Baku:

For 170 desetines, or 725 acres, of Crown lands, 2,980,000 roubles; for 175 desetines, or about 360 acres, of private lands, 2,028,000 roubles; and for sundry other tracts about 100 desetines, or 250 acres, about 1,000,000 roubles.

Such prices do not exist nowadays. Tested territories may be purchased now at half the price originally paid. Besides, Crown lands on new territories may be leased at the rate of 10 roubles per desetine, or about 2½ acres.

The total number of wells sunk since 1873 till this year amounts, in round figures, to about 500, of which 170 are now utterly exhausted; 60 abandoned on account of technical or financial difficulties; about 40 are being kept idle for want of demand for crude oil; 70 not yet completed; and the rest, about 160, are actually productive wells, and yielded, in the year 1885, 575,000,000 gallons of crude oil, the yearly production of the average well being about 3,500,000 gallons.

The average cost of a well, including labor, derrick, boring tools, pipes for casing, boiler, engine, etc., is reckoned to amount to 20,000 roubles, or about 2000*l*.

There are 136 refineries, of which the twelve largest are furnished with 216 stills, of a capacity of 750,000 gallons, and producing yearly 125,000,000 gallons of kerosene; and the 124 small refineries, having 325 stills, of a capacity of 475,000 gallons, produce yearly about 15,000,000 gallons of kerosene.

Owing to low prices, forty of the above mentioned small refineries have entirely stopped operations, and at a great many others, not excepting large ones, works had for the same reason been partly suspended.

It is estimated that by using the actual working capacity, taking 300 working days, the twelve large refineries are prepared to turn out yearly 200,000,000 gallons, and the 124 small refineries 125,000,000 gallons of kerosene.

The refining of lubricating oil is much less extensive, and is in the hands of but a very few firms. The total production of lubricating oil in 1885 was about 8,000,000 gallons.

To the above may be added that there are three factories preparing sulphuric acid. The quantity of that product turned out in 1885 was 2,500,000 gallons.

For storing crude oil on the spot of production there are reservoirs capable to hold above 60,000,000 gallons, and for storing kerosene at the Tcherni Gorodok there are iron tanks capable to hold 20,000,000 gallons. Besides there are immense reservoirs for storing petroleum residue.

There are actually thirteen pipe lines connecting the wells with the refineries, each from 8 to 9 miles long, the inside diameter of the pipes 3, 4, 5 and 6 inches, and besides a great many branch pipe lines at the wells, and others connecting the refineries with the storage tanks and the different piers.

The total length of pipe lines is above 150 miles, and

the conveyance capacity of the thirteen pipe lines in twenty-four hours is about 3,500,000 gallons.

The number of tank cars on the Trans-Caucasian Railway is now 900, each holding in bulk 3000 gallons; seven trains composed of tank cars and ordinary wagons with petroleum cargoes leave Baku daily. The yearly carrying capacity of the railway by means of the existing rolling stock amounts to 65,000,000 gallons.

The number of tank steamboats on the Caspian is twenty-nine, of from 260 to 930 tons each, their total tonnage being 985,000.

There are besides two specially constructed tank sailing vessels, 750 tons each, and 170 vessels, steamboats and sailing ships, carrying exclusively petroleum products.

It should be added that very considerable works have been completed in connection with the petroleum trade also at the different places of distribution along the Volga and on the railway lines running from Tsaritsin to the ports of the Baltic, also at Odessa and this port.

The iron storage tanks of Batoum are capable to hold about 10,000,000 gallons of kerosene, and two tank steamboats have been specially built for carrying kerosene in bulk from this port, a few more being projected for the same purpose.

The different instruments, tools and machinery were in former years chiefly supplied from foreign countries, and partly from Russia proper. A decided change has taken place in that respect.

Drillers as well as refiners are now, to a great extent, independent of foreign manufacturers.

There are seven first-rate mechanical workshops at Baku, and many more of a less perfect organization, fully securing local supply of new tools and instruments, and capable to repair any damaged or broken machinery. At some of the works new boilers can be made, and there are a few foundries for casting metals, and other works for smelting and welding purposes.

Pumps, gas and steam engines, pipes and tubes for casing, are still supplied from England, Germany, Belgium and St. Petersburg.

As to the material and products used on the works, there has also been much done to find local substitutes for foreign imports. The bulk of iron, tank plates, and partly cement and sulphur, are now supplied from Russia proper and the Caucasus.

Caustic soda, saltpetre, fire-bricks and fire-clay, also coke (used at the foundries), comes still from England.

Sulphuric acid is prepared on the spot, for which purpose, as above mentioned, three factories have been established.

A further step in the way of economy has been recently made by a German chemist, who has contrived to utilize the refuse of sulphuric acid by a special process of regeneration.

The number of laborers employed on the different works has greatly diminished during the last few years, owing to a variety of mechanical improvements economizing manual labor, but partly also owing to temporary suspension of operations on account of bad business.

Skilled labor is still chiefly supplied from Russia and foreign countries, especially Sweden. Common laborers are amply procured locally, but the contingent of skilled native laborers, Tartars, Armenians, etc., properly trained and fit to do work requiring skill and foresight, is perceptibly increasing.

Wages have not much altered, and are as low as 1*s.* per day for unskilled, and from 2*s.* to 4*s.* for skilled laborers.

The cost of production is very low. As to crude oil, it cannot be exactly defined, for it depends entirely on the nature of the well sunk. The same outlay of 2000*l.* may in one case lead to a fountain yielding millions of barrels, in another to a pumping well yielding but a few thousand barrels of crude oil. Anyhow, the highest price of crude oil at the wells is at present 1 copeck per pood, or less than a farthing for five gallons, and it is estimated that even at such a low figure the cost of production is in the average safely covered.

The cost of producing refined oil is more amenable to calculation.

	Copecks.
The production of 1 pood of kerosene requires in the average 3¼ poods of crude oil, at 2 copecks per pood, delivered at the refinery	6½
Sulphuric acid	1½
Caustic soda	½
Labor	4
Total	12½

The above quantity of crude oil upon having been refined leaves 1½ poods of residue, which, as liquid fuel, may be realized at 2 copecks per pood, giving fully 3 copecks, which have to be deducted from 12½ copecks.

The cost of producing 1 pood of kerosene is thus made out to amount only to 9½ copecks, or of 5 gallons to about 2*d.* and a very small fraction.

The cost of heating is not taken into account, as the given quantity of 3¼ poods of crude oil still leaves ¾ pood partly used up for heating, partly destroyed by the very process of refining.

It is evident that to the above mentioned cost of production a great many other items have to be added. The cost of plant, the wear and tear of the same, the management of the business, the personal expenses of the owners of the refineries, and the enormous interest paid on capital, partly originally invested, partly borrowed to cover the working expenses, forming all no doubt considerable items of the actual cost of production, are scarcely taken into account at all by the small refiners, and cannot be conveniently ascertained as to what they amount to at the works of the large firms.

In comparison with the very limited cost of production, the cost of storage and transport, although much reduced lately, is still inordinately great.

For storing petroleum in tanks for a period of from three to twelve months, respectively from 1 to 3 copecks per pood, or from about ¼*d.* to ¾*d.* per 5 gallons, is charged.

For conveying crude oil from the wells to the refineries by pipe on a distant of about 8 miles, the rate is ¼*d.* for 5 gallons, and it formerly was ¾*d.*

The freight on the same quantity from Baku to Tsaritsin has been reduced from 20 to 13 copecks, or from about 5*d.* to 3¼*d.*

The railway rate from Baku to Batoum has been reduced to 16 copecks per pood, or 4*d.* per 5 gallons. It was originally 20 copecks, or 5*d.*

Through transports to the different markets of Russia and Europe at fixed rates are available, but to a very limited number of traders.

The costs of transport from Baku to the more distant markets are as follows:

	s.	*d.*
To St. Petersburg, per 5 gallons	1	0
Warsaw, ditto	0	10
Odessa, ditto	0	7
Vienna, ditto	1	4
Berlin, ditto	1	4
Constantinople, ditto	0	7
Marseilles, ditto	0	8½
Antwerp, ditto	0	8½
Hamburg, ditto	0	8½
London, ditto	0	8½

The above rates of transport, including charges for storage at the different places of transhipment, per 5 gallons of kerosene, and by comparing the figures relating to cost of transport with those showing the cost of production, it may be inferred that the former still form an inordinate percentage of the actual market prices of Baku kerosene, in Russia as well as in Europe, leaving scarcely any margin for profits.

There are two private banks and one Government bank at Baku. To trade at large, however, these banks are of little avail. At the rate of from 9 to 12 per cent. money is procurable, but to a limited extent there. Traders are thus forced to secure cash or discount bills through a certain class of people on very onerous terms, paying from 18 to 36 per cent. interest per year.

Cash payments are actually unknown, and sales are being contracted nominally on six months' credit, which it has become the custom to prolong to nine and twelve months.

As it is, prices on the spot are not ruled by the actual cost of production, but depend to a great extent on the greater or lesser need of money on the part of sellers. Refiners will not unfrequently sell their product at any price for want of sufficient storage capacity. Occasionally purchases are made for large quantities of kerosene by contracts binding the seller to deliver the merchandise at Baku at a certain time for a fixed price, but leaving at the option of the buyer to take or to refuse the merchandise.

The market value of kerosene is also detrimentally affected by the varying qualities of the produce. A few of the largest firms produce kerosene of the very highest quality, whilst there are others who discredit the industry by marketing large quantities of a spurious kind.

No regular special agencies, excepting those of two or three firms, have been established at home or abroad for furthering the interests of the trade. Hence the great number of second-hand dealers and middlemen who, without having invested a penny in the business, are allowed to make profits at the cost of producers and legitimate traders.

To safeguard the interests of the trade, it had been suggested some time ago to institute a regular Exchange at Baku, to establish special agencies in the principal towns of Europe, and to make compulsory a uniform standard as to the quality of kerosene destined for export.

The former two contemplated measures have so far not been applied; and as to the latter, it has been enforced by a Government order, dated the 8th (20th) March of this year, that all illuminating mineral oils having a flashing point below 28 degrees Centigrade, or 82·4 degrees Fahrenheit (Abel-Pensky test), should be considered unsafe, and as such shall be subjected to special precautionary rules relating to transport and storage of inflammable material.

The following data may show how enormously the Baku petroleum trade has increased in volume since 1883. The following quantities, shown in gallons, were exported from Baku by the Trans-Caucasian Railway and by the Caspian to Russian and foreign markets:

	Gallons.
In 1883—	
Kerosene	72,000,000
Crude oil	10,000,000
Residue	87,000,000
Lubricating oil	5,000,000
Benzine	240,000
Total	174,240,000
In 1884—	
Kerosene	109,000,000
Crude oil	10,000,000
Residue	142,800,000
Lubricating oil	7,200,000
Benzine	380,100
Total	269,380,100
In 1885—	
Kerosene	137,000,000
Crude oil	19 000,000
Residue	170,500,000
Lubricating oil	7,950,000
Benzine	140,000
Total	334,590,000

The average prices for petroleum products at Baku are at present so low that they leave no margin for profits.

They are per pood, or five gallons:

	s.	d.
For crude oil	0	0½
For residue	0	0½
For kerosene	0	2½
For lubricating oil	1	6

However great the preseut depression of the Baku petroleum trade, it cannot be assumed that the industry and the trade itself are threatened in any way; but the great majority of people holding the same in hand are certainly in danger, beiug incapable to keep pace with the rapid growth of the business.

At the time when affairs were prosperous, besides natives of Russia and the Caucasus, a good many foreigners, Swedes, Germans, Frenchmen, etc., established themselves at Baku for either industrial or commercial purposes in connection with the petroleum trade.

The absence of British enterprise, capital or skill in any branch connected with the Trans-Caucasian petroleum industry is quite remarkable. Not a single British house connected with the trade in question can be pointed out either at Baku or at Batoum.

It might be remarked that, in the face of the present unsatisfactory state of affairs, it is not the opportune moment for investments of any kind in the business.

On the other hand, it cannot be denied that, in the presence of the enormous natural petroleum riches and the extensive industrial and commercial establishments representing so considerable an amount of wealth, the crisis cannot be allowed to last much longer, and that after all the Trans-Caucasian petroleum trade is sure to prove one of the most extensive aud the most prosperous in this country.

The now contemplated pipe line for conveying petroleum to the ports of the Black Sea, if once realized—and there can be no doubt that before long it will be found a matter of imperative necessity—must inevitably create a general rise of prices for petroleum lauds and the products of Baku. Moreover, it must call forth new industrial life and activity on this coast, and lead to increase of trade and shipping at this port. British merchants surely should bear this in mind, and it would be in their interest to make themselves acquainted with the present situation on the spot, and to take measures beforehand, so as not to be too late and miss the market time.

THE Cambria and Westmoreland Gas Company has sold to the Greensburg Fuel Company all its lines laid in Greensburg, and the 4-inch supply line from that town to the field, three and one-half miles distant, for $80,000. The Greensburg Fuel Company has a capital stock of $40,000, which it is understood will be increased to $100,000. It now has one well blowing in Grapeville, and will have no difficulty in supplying all gas needed in the town. By the terms of the sale, the Greensburg Company agrees to fulfil all contracts made by the Cambria Company that extend to October 1, 1887. These contracts were taken very low.

OIL REGION CHRONOLOGY.

For September, 1886.

September 1.—Age oil report shows 328 wells completed in August, of which 42 are dry; new production, 13,790 barrels; new rigs, 142; old rigs, 142; wells drilling, 318; total field operations, 602; decrease from July, 91. Market fairly steady with small fluctuations and light trading. Opened at 61⅞c, advanced to 62⅛c, weakened off to 61½c and closed at 61⅝c. Carrying rates—Bradford and Oil City, 50c; New York, 55c to 60c, Pittsburgh, 45c. Washington—Cameron No. 6, 70 feet in the sand and doing about 100 barrels a day; Davis No. 1, makes a 30 barrel flow; McGahey 120 barrels last twenty-four hours; Willets No. 9 is doing 4 barrels an hour from first pay streak; Gordon No. 4 shot and starts up at 9 barrels an hour. Field gauge 14,085 barrels from 61 wells. Lima *Republican* reports 35 wells completed and 4 dusters in Lima field during August, with new production of 1795 barrels. Number of producing wells in the field 105; daily yield 4295 barrels. Independent pipe line organized by Lima producers. House of G. C. Hyde, on Hilton street, Bradford, destroyed by fire.

September 2.—Market opened at 61¾c bid, advanced to 61⅞c, weakened to and closed at 61⅝c. Washington—Davis No. 2, 38 barrels an hour; Davis No. 1, 160 barrels in twenty-four hours; Barre No. 3 gauges 623 barrels last twenty-four hours. Field gauge 13,735 barrels. Clark & Shannon's No. 4, on Thompson farm, Shoustown, starts flowing at 25 barrels an hour. Marks well doing 55 barrels an hour. Shortage in supply of natural gas at South Side, Pittsburgh, attributed to recent earthquakes.

September 3.—Market opened at 61½c, which was the highest point, broke to 61¼c, and closed at 61⅜c bid. Washington—Stewart well doing 76 barrels an hour; McGahey drilling in inferior sand and making 125 barrels a day; Davis No. 1 made 170 barrels last twenty-four hours; Cameron No. 6 made 80 barrels; Chartiers well, on Forest lot, through Gordon sand and dry. Shannopin—Shannon & Clark's No. 4, on the Thompson farm, one mile south of the Marks gusher, made 400 barrels first twenty-four hours, and doing 16 barrels an hour this morning. Harry Moreland, aged 9 years, while riding a velocipede in Titusville, along Main street, killed by a kick from a horse. Gilbert C. Ray, of Franklin, found guilty of murder in the second degree. Death of E. W. Bettes, a well-known citizen of Titusville, aged 46 years.

September 4.—Market opened at 61½c, lowest point of the day, firmed up to 61⅞c, reacted to 61½c, advanced to 61⅞c, broke to 61⅝c, and closed at 61⅞c bid. Production of Washington field 13,524 barrels from 66 wells.

September 5.—Sunday. Washington—McGahey well through sand, had 85 feet and is doing 130 barrels a day.

September 6. — Reported decline at Washington causes a small boom in the market. Opened at 62½c, advanced with a few reactions to 63½c, fell off to 63c, rallied to 63½c, broke to 62¾c, and closed at 63c bid. Carrying rates—Bradford, Oil City and Pittsburgh, 50c; New York, 55c to 65c. Washington—Willets No. 11 showing oil in the Manifold sand; McKeown No. 8 shot and made 450 barrels; No. 5 increased from 150 barrels a day to 30 barrels an hour. Lima, O.—Barret & Co. No. 2, Dietzler farm, starts flowing at 35 barrels an hour. Shannopin—Marks well, 30 barrels an hour; Shannon & Clark No. 4, on Thompson, made 270 barrels last twenty-four hours. Explosion of natural gas in a sixty foot well near Warsaw, Ill., killed Henry Miller and seriously injured three other persons.

September 7.—Market opened at 63c, highest point of the day, declined gradually to 62⅜c, and closed at that figure bid. Washington—Davis No. 2 gets lower pay streak and increases to 85 barrels an hour; Gordon No. 5 four bits in sand and made 40 barrels in eight hours. Death of N. B. Smiley, a prominent attorney of Bradford, at Bemus Point, Chautauqua county, N. Y. Bradford B. B. C. suffers its second defeat at the hands of the Altoonas; score 13 to 1.

September 8.—Market opened weak at 62⅛c, followed by sales at 62c, firmed up and closed at 62¼c. Washington—Davis No. 2 increased to 99 barrels an hour by deeper drilling in the lower pay streak; Gordon No. 5 made 90 barrels in twenty-one hours; McKeown No. 5 500 barrels in twenty-four hours. First use of natural gas in a balloon made by Prof. Myers at the Franklin fair.

September 9.—Market stronger; opened at 62¼c, firmed up to 62½c, receded to 62⅜c, several times then advanced without any reactions, and closed at 63⅜c. Carrying rates 40c to 50c. Washington—Feld gauge 14,625 barrels; Gordon No. 5 through sand and good for 100 barrels; Davis No. 1 making 170 barrels, and No. 2 1920 barrels a day; Willets No. 9 20 barrels an hour; Willets No. 11 shot and shows no improvement. Shannopin—Marks well 920 barrels, and Shannon, on Thompson, 180 barrels a day.

September 10.—Market opened at 63⅝c, highest point of day, weakened to 63c, rallied to 63¼c, broke to 62¾c, and closed at 63c bid. Washington—Willets No. 9 made 500 barrels past twenty-four hours; Davis No. 2 80 barrels; Stewart 49 barrels an hour; Cameron No. 7 showing oil in Gantz sand; Hess No. 4 started flowing last night from top of "fifty-foot" rock.

September 11.—Market dull and heavy; opened at 62⅞c, the highest point, weakened to 62¼c, and closed at 62½c bid. Carrying rates 50c. Washington—Stewart well gauge, 1056; Davis No. 2, 1900; Smith No. 3, 425; Willets No. 9, reaches the lower pay streak and makes 218 barrels first two hours. Field production 13,274 barrels from 70 wells. Shannopin field gauge 2105 barrels from 26 wells. A big oil strike reported at Manistee, Mich., at a depth of 1920 feet.

September 12.—Sunday. Small fire at the Moran Hotel, Edenburg; loss, $800. Washington—Willets No. 9 gauges 80 barrels an hour; Davis No. 1 which struck the second pay streak last night is doing 50 barrels an hour; Barre No. 2, shot yesterday, made 406 barrels last twenty-four hours.

September 13.—Market weaker on feverish news from field; opened at 62¼c, advanced to 62⅝c, and closed at 62⅜c. Washington—McGahey well shot and starts up at 30 barrels an hour; Davis No. 2 doing 68 barrels an hour, and No. 1 45 barrels an hour. Production 15,600 barrels. Cameron No. 6 made 119 barrels, and No. 7, 31 barrels in last forty-eight hours; Willets No. 9 increased by agitation from 75 to 95 barrels an hour; P. & E., old Manifold, mountain sand well, shot and does 30 barrels first hour. Lima, O.—Work commenced on the Standard refinery. Spear well, which came in Saturday, made 600 barrels last twenty-four hours.

September 14.—Market opened weak at 62c, and advanced steadily until 63¼c was reached; weakened to 62⅞c, reacted to 63¼c, and closed at 63c bid. Carrying rates 50c. Washington—Willets No. 9, by deeper drilling, raised from 88 to 162 barrels an hour; McGahey well

made 440 barrels first twenty-four hours after the shot, and gauges 17 barrels an hour this morning; Cameron No. 6, through sand and doing 125 barrels a day; Davis No. 1. 50, and No. 2, 70 barrels an hour. Buckeye Pipe Line completes its sixth iron tank at Lima, and is building the seventh. Gilbert C. Ray seutenced by Judge Taylor, at the Franklin court, to nine years' imprisonment at hard labor; for wife murder.

September 15.—Market opened at 63⅛c, sold off to 63c, advanced to 64⅜c, receded to 64¾c, and closed at 64⅜c. Washington—Willets No. 9 produced 242 barrels in two hours, and 117 the third hour; Davis No. 1, 38 and No. 2. 62 barrels an hour; McGahey 14 barrels an hour; Thayer No. 4 taps the Gordon sand and starts at 85 barrels an hour. Kane reported to have 282 wells doing 4267 barrels.

September 16.—Market opened at 64⅛c, weakened to 64c, and advanced to 65⅛c. It afterwards weakened to 65c, and at 2:20 p. m. went up to 65⅞c. It then broke rapidly and closed at 64⅝c. Washington—Cameron No. 6 shot and made 132 barrels first twelve hours; Willets No. 9 made 2830 barrels last twenty-four hours and doing 114 barrels an hour this morning; McKeown No. 2 shot and starts at a 1200 barrel rate; McKeown No. 1 flowing a little from first pay streak; Thayer No. 4 drops off to 36 barrels an hour and flows steadily at this rate; Reed, Bryson & Co., on the Mrs. Miller lot. showing for a good well; Fair Ground well, 11 barrels an hour; Union No. 3, on Taylor, starts at 25 barrels an hour; Ten-Mile Oil Company's well, near Amity, comes in a roaring gasser. Shannon No. 5, Thompson farm, Shannopin, strikes sand and showing for 300 barrels.

September 17.—Market opened at 64¾c, and advanced to 65¼c. It then slowly settled to 64⅝c, rallied to 65⅛c, dropped off to 64⅜c, and closed weak at this figure. Washington—Willets No. 9, 90 barrels, and Stewart 36 barrels an hour; Thayer No. 4, 24 barrels an hour; McKeown No. 2, 50 barrels an hour.

September 18.—Market opened weak at 64¼c, rallied to 64⅝c, broke to 64c, firmed up to 64¾c, and toward the close boomed to 65⅜c, closing at 65⅛c bid. Carrying rates 50c to 65c. Washington—Willets No. 10, six feet in the sand, makes 100 barrels first four hours; field gauge this morning 17,570 barrels from 72 wells; Willets No. 9, gauges 2457; Davis No. 2, 1600; Taylor No. 3, 1100; McKeown No. 2, 1000. In the afternoon Thayer No. 5 began flowing 30 barrels an hour; Reed & Co., on Miller, increased to 30 barrels an hour; Barre No. 2 shot and starts at 600 barrel rate; Gabby well shot with no response.

September 19.—Sunday. Boggs & Armstrong's well, oa 3655, Elk county, reported through sand and dry. Storm raised havoc with telegraph conuections between Bradford and the outside world. McKeown No. 1, Washington, struck by lightning and burned; one 800 and two 250-barrel tanks full of oil destroyed. Thayer No. 5 gauged 555 barrels first twenty-four hours.

September 20.—Market opened at 65¼c, boomed to 65⅞c, and broke to 65c. Later rallied to 65⅛c, sold off to 64¾c, advanced to 65c, and closed at 64⅝c. Carrying rates—New York, 65c; Bradford, Oil City and Pittsburgh, 50c to 55c. Washington—Reed well down to 12 barrels an hour in morning, but increased to 30 barrels by deeper drilling; Willets No. 9, 85 barrels an hour; McKeown No. 1, 400 barrels a day; Stewart well, (Craig & Co.,) through sand and doing 36 barrels an hour. Death of John Theobald, the brewer, at Titusville. A tank car of oil burned near Irvineton. Excelsior Pipe Line ready to make connections in Tarkill field. Premium on Tarkill oil advanced to 15c above certificate prices. Production of Shannopin or Shoustown field 2480 barrels from 27 wells. Charles L. Robinson killed at Clarendon by inhaling natural gas. Death of E. B. Barton, an old-time oil producer, at Bradford, aged 59 years.

September 21.—Market opened steady at 64¾c, and broke to 64¼c. It then reacted until 65c was reached, weakened to 64½c, and closed at 64⅝c bid. Carrying rates—New York, 70c to 75c; Bradford, Oil City and Pittsburgh, 50c. Washington—Cameron No. 5, 50 barrels an hour; Willets No. 9, 81; No. 10, 20; Stewart, 36, and McKeown No. 2, 25 barrels an hour; Reid or Bunghole well, made 234 barrels in twelve hours.

September 22.—Market opened at 64¾c, firmed up to 65¼c, dropped to 64⅞c, and advanced to 65⅝c. It afterwards broke to 64¾c, aud closed at 65c bid. New York reported very bullish and carrying rates there higher than elsewhere. Washington—Reid & Co.'s well makes 357 barrels in twenty-four hours, and in evening increased to 60 barrels an hour; Cameron No. 5, increased under the drill from 24 to 49 barrels an hour; Galligan well, on Taylor lot, shot and starts at 300 barrels.

September 23.—Market opened at 64¾c, firmed up to 65⅛c, broke to 64½c, and closed at 64⅝c. Washington—Cameron No. 5, 40; Willets No. 9, 72 barrels an hour; Taylor No. 2, through sand and doing 100 barrels a day; Reed & Co.'s well made 355 barrels in five hours and in the evening was doing 90 barrels an hour. Raccoon well, on Marks farm, Shannopin, increased by deeper drilling from 35 to 80 barrels an hour. Heavy storm of rain, wind and lightning at Lima, O. A woman killed and a number of wells with a large quantity of oil burned; loss, $25,000. John M. Moore & Co., oil and stock brokers, New York, make an assignment. A colored lady named Butcher, burned to death at Linden, Washington county, from the explosion of a kerosene lamp, which she was filling while lighted.

September 24.—Market opened and closed at 64¾c, and kept within limits of 64⅝c and 64⅞c all day. Carrying rates—New York, 65c; Bradford, Oil City and Pittsburgh, 50c. Washington—Hess No. 3, through Gordon sand without oil, but flowing 90 barrels a day from the "fifty-foot;" Barre No. 5, showing for good well; Willets No. 9, 90 barrels an hour; Reid well down to 55 barrels an hour. Runs of S. W. Pipe Line from Washington field 18,575 barrels, the heaviest yet made. Derrick at Mt. Nebo well with 250 barrels of oil destroyed by fire. Marks well, Shannopin, drilled two feet in the sand and made 100 barrels one hour. Shanuon No. 5, showing for good well. Wm. C. Bush convicted of fratricide at Ridgway, Elk county; crime committed last May.

September 25.—Market opened at 64¾c, ranged between 64⅝c aud 64⅞c, and closed at 64⅞c bid. Washington—Cameron No. 1, shot and starts up at 108 barrels first hour; Reid well, 54 barrels an hour; Manifold shot and started at 30 barrels an hour. Twenty-four hour gauges this morning—Reid, 1264; Stewart, 896; McGahey, 264; Willets No. 8, 350; No. 9, 1905; No. 10, 288; McKeown No. 6, 200; Davis No. 2, 1275. Production of field 16,381 barrels from 78 wells for twenty-four hours ending at 7 a. m. Solar No. 6, A. P. Morrow farm, Shoustown, makes 140 barrels first thirteen hours.

September 26.—Sunday. Cameron No. 1, Washington, doing 45 barrels an hour. Solar Oil Company's No. 6, on A. P. Morrow farm, Shannopin, made 333 barrels first twenty-seven hours.

September 27.—Market opened at 65c, the highest

point of the day, gradually weakened off and closed at 63c. Washington—Field gauge 15,515 barrels. Reid well 48 barrels; Willets No. 9, 76 barrels an hour. Twenty-four hour gauges—Smith No. 3, 242; Cameron No. 5, 750; Cameron No. 1, 918 barrels.

September 28.—Market opened at 63c, the highest point of the day, and broke to 62¼c, rallied to 62⅞c, weakened to 62⅜c, advanced to 62¾c, and closed at 62½c. Washington—Barre No. 5, strikes the middle pay streak and starts at 95 to 100 barrels an hour; Reid well makes 616 barrels in twelve hours; Willets No. 9, 63 barrels an hour. Marks well, Shannopin, 75 barrels an hour. Solar No. 6, through sand and doing 15 barrels an hour.

September 29.—Market opened at 62½c, the lowest point of the day, and advanced slowly to 63c, receded to 62½c, rallied to 62¾c, and closed at 62⅝c. Washington—Willets No. 10, strikes another pay streak and starts up at 70 barrels an hour; No. 9, doing 59 barrels an hour; Hess No. 4, dry in Gordon, doing 30 barrels a day from "fifty-foot." Shannopin—Solar Oil Company's No. 10, A. P. Morrow farm, ten feet in the sand with light showing; Marks well averaged 80 barrels an hour. Production of field 4000 barrels.

September 30.—Market opened at 62¾c, the highest point of the day, broke rapidly to 62¼c, the lowest point, rallied to 62½c, and closed at 62⅜c. Carrying rates—Bradford, 50c and 55c; New York, 65c and 70c; Oil City, 60c; Pittsburgh, 55c. Washington—Barre No. 5 increased from 52 to 90 barrels an hour by deeper drilling, Willets No. 8, made 183 barrels in eighteen hours; No. 9, 57, and No. 10, 40 barrels an hour. Production of field 17,000 barrels. Barre No. 5, made 1369 barrels last twenty-four hours. Hess No. 3, doing 25, and No. 4, 35 barrels a day. They had no oil in Gordon or fourth sand. Shannopin—Solar No. 10, strikes a better streak and starts off at 90 barrels an hour; in the evening was doing 75 barrels an hour; Solar No. 7, doing 45 barrels an hour.

Philadelphia Petroleum and Stock Exchange.

This organization has now been in existence four years, and at the present time is in a healthy and prosperous condition. It is very likely to continue its usefulness and extend the volume of its business, and it may be said to be in the enjoyment of vigorous youth; daily adding to its vitality and resources. To use a prevalent localism the Philadelphia Petroleum and Stock Exchange has cast aside its "swaddling clothes" and is recognized as one of the powerful and influential business organizations of the city. It is under good management and the era of prosperity which it inaugurated recently bids fair to continue indefinitely and make it one of the strongest business corporations in the country.

The history of this Exchange dates back to February, 1882, when with a membership of about sixty it was incorporated as the Philadelphia Oil Exchange, at 226 Walnut street, with W. Hastie Smith, President; A. Douglas, Secretary, and J. H. Waugh, Treasurer. The original operations of the body were confined exclusively to oil, and the transactions in many instances were very large. The rooms occupied became totally inadequate for its purposes, and on July 1, 1883, the Exchange removed to its present quarters, the Merchants Exchange building, at Third and Walnut streets, which had been occupied for many years by the Philadelphia Stock Exchange. Subsequently mining stock having become a favorite class of securities for investment and speculation the Exchange extended its facilities to cover their purchase and sale and the volume of business transacted in mining shares soon became very extensive. Confining its operations to these two special branches and thus in a measure restricting its usefulness the Exchange continued a prosperous career until May of the current year, when the more enterprising of its members formulated and successfully carried out a plan which brought the body into active competition with the old Stock Exchanges, both here and in New York, and made the organization at once a powerful element in the financial world. The new move referred to involved the changing of the title to that under which the body is now known, and the trading in stocks and bonds now listed on the New York and Philadelphia Exchanges in which large transactions are now carried on daily. The wisdom of this move became immediately apparent, the value of seats took an upward turn, there were many applications for membership, and the volume of business transacted commenced a steady increase which is still maintained.

At the present time the operations of the Exchange includes trade in crude oil certificates, railroad stocks and bonds, and mining and manufacturing stocks generally. Among the list of railroads whose shares daily change hands at this board are the following:

Buffalo, N. Y. & Philadelphia.	Missouri Pacific.
Canada Pacific.	Morris & Essex.
Central Pacific.	Nash., Chattanooga & St. Louis.
Chesapeake & Ohio.	New York Central & H. R. R.
Chesapeake & Ohio, 1st pref.	New York, Chicago & St. Louis.
Chesapeake & Ohio, 2d pref.	N. Y., Chicago & St. Louis, pref.
Chicago, Burlington & Quincy.	New York & New England.
Chicago, St. Louis & Pittsburgh	New Jersey Central.
Chicago, St. Louis & Pitts., pref.	Norfolk & Western, pref.
Chicago & Northwestern.	Northern Pacific.
Chicago & Northwestern, pref.	Northern Pacific, pref.
Chicago, Milwaukee & St. Paul.	Ohio Central.
Chi., Milwaukee & St. P., pref.	Ontario & Western.
Del., Lackawanna & Western.	Oregon River & Navigation.
Delaware & Hudson.	Oregon Trans-Continental.
Denver & Rio Grande.	Pennsylvania.
East Tenn., Virginia & Georgia.	Pullman Palace Car Co.
E. Tenn., Virginia & Geo., pref.	Pacific Mail.
Erie.	Rich. & West Point Terminal.
Erie, 2ds.	Rock Island.
Houston & Texas.	Reading.
Huntingdon & Broad Top.	St. Louis & San Francisco.
Huntingdon & Broad Top, pref.	St. Louis & San Francisco, pref.
Kansas & Texas.	St. L. & San Francisco, 1st pref.
Illinois Central.	St. Paul & Omaha.
Ind., Bloomington & Western.	St. Paul & Omaha, pref.
Lake Shore.	St. P., Minneapolis & Manitoba.
Lehigh Coal & Navigation.	Texas Pacific.
Lehigh Valley.	Union Pacific.
Louisville & Nashville.	Wabash.
Manhattan Consolidated	Wabash, pref.
Memphis & Charleston.	West Shore, 1st.
Michigan Central.	Western Union.

It is thus evident that the business of The Philadelphia Petroleum and Stock Exchange covers a very broad scope, and as shares are sold on a commission of one-sixteenth against one-eighth on the older boards, and in addition its members are allowed to halve commissions with banks, bankers, petroleum and stock brokers having their places of business out of the city, and also with members of the Philadelphia Stock Exchange, it is, therefore, not wonderful that the organization prospers and daily becomes a more formidable element of competition.

This organization also offers chances to the smaller investors, and for this particular feature deserves great credit as it solves the problem of how to get rid of bucket shops at once. An investor can at this Exchange purchase any number of shares from ten upwards at the market price, and he is not as in the older boards, required to sacrifice a bonus—usually one-quarter of one per cent.—simply because his purchase is a small one. In addition to this his business is conducted by men of good standing backed by a strong organization, which in order to present a high standard, must see that the patrons of its members are fairly and honorably treated, or the offending member immediately expelled.

Taking all circumstances into consideration the community is to be congratulated on the growth and development of this body. It fills an honorable and useful position in financial affairs and is well managed in every way.

Mr. John S. Davis is the present President of the Exchange and W. H. Pettit Secretary and Treasurer. It has two hundred and twenty-five members, among whom are included influential firms in this city, in New York, Pittsburgh, and in Oil City.—*American World.*

England's Petroleum Interests.

The two petroleum companies that have been started this year in this country (Englaud) seem likely to be the forerunner of several others, says *Money*, and it is not improbable that a mania may set in for exploiting the product. Both the United States and Russia have created vast and lucrative industries from their petroleum deposits, and the argument is plausible that England, having become a petroleum power by the annexation of Upper Burmah, should go in and do likewise. There are, however, one or two things to be taken into consideration before speculators rush heedlessly into the field; and we may be doing a service if we define the scope of British enterprise and specify the objects to be aimed at. To commence with petroleum itself, the article varies very much in character; and thus while from one hundred gallons of "crude," America can extract seventy-five gallons of refined petroleum, or lamp oil, Russia can only obtain twenty-five or thirty gallons and Burmah and Egypt eight or ten. It does not follow from this, however, that the oil fields of Europe and Asia are inferior to those of America. At Baku a single well out of the 500 has spouted more oil to the surface in a day than all the 25,000 in America put together; and this terrific copiousness, therefore, permits of lamp oil being produced in the Caspian considerably cheaper than in the States. The heavier petroleum also, like the heavy oil of Burmah, hitherto known as Rangoon oil, is also of great value for lubricating purposes and for fuel. This is the characteristic of the Egyptian petroleum recently discovered; aud, although, of course, other wells may give a lighter oil, more suitable for illuminating purposes, that already brought to the surface and tested, is only fit for fuel and grease. But this is probably an advantage rather than otherwise. America produces so much refined petroleum that she has relatively little residue left for fuel. Russia can send the lighter and dearer lamp oil readily to Batoum, but it is not so easy to dispatch cheaply to the Black Sea the petroleum refuse. Hence, if oil burning furnaces come into vogue, as they seem destined to do, this Egyptian supply of fuel oil close to the Suez Canal will be of extreme value, and the deposits will be largely worked. The advantages of oil fuel over coal are so well known by this time, and so many hundred steamers and locomotives in Russia use nothing else, that the petroleum discovery in Egypt is likely to hasten the time when coal will have to yield to petroleum in the East. Apart from the saving of our coal fields this will occasion, few will regret the introduction of fuel worked with so little dirt and discomfort, and abolishing altogether the sufferings of stokers, coal trimmers, etc., in the Red Sea. Egypt will be able to "oil" the ships at Suez and Burmah; as soon as we have put King Theebaw's dominion in order, will be able to supply the depots at Ceylon and Singapore, besides making good any deficiency of the Chinese and Japanese petroleum fields.

Ship owners in this country are already turning their attention to liquid fuel furnaces, and we need say little to stimulate them further in the matter. Far more important is the conveyance of oil in bulk. Most of the American oil is conveyed in barrels, which are dear to make, difficult to keep from leaking, take up a good deal of room, and have to be sent back empty. Many years ago a weak effort was made to bring the oil to Englaud in sailing vessels roughly fitted with cisterns, but the enterprise came to grief. In Russia, where a hot climate in the Caspian and the absence of timber made the barrel question a vital one, Ludwig Noble, a Swedish engineer, invented and introduced a tank steamer or floating cistern, and the type proved so successful, that there are nearly 100, some 200 feet long, running on the Caspian. while twice as many smaller ones ply on the Volga river. All of them burn liquid fuel, and hundreds of voyages have been performed without any accident from the fluid character of the cargo or from explosion. The casualty the other day at Baku was not with any of these steamers, but with an old sailing vessel, fitted with tanks to convey benzine,—which is rarely carried by the oil steamers,—and was in charge of a native Asiatic crew. Latterly several oil steamers have been placed on the Black Sea; and a sailing vessel, the Crusader, has brought two consignments of oil in bulk from America to London It has been thoroughly demonstrated, therefore, that oil can be safely and cheaply conveyed in tauk steamers in the roughest seas and hottest climes, and we are persuaded that ere long a deal of English enterprise will be thrown into this branch of the petroleum trade. If 100 tank steamers are required on the Caspian for the Russian market, several hundred will be needed for the American and Eastern trade, and there is, consequently, room, not simply for one tank steamer company, but for a dozen. Also in the tank distribution of petroleum in towns, a wide field for operation exists, and a start has already been made in London with street tank wagons, which will establish a tank delivery between the wholesale and retail reservoirs, and materially cheapen the price of oil.

The Refined Market.

Little interest has been apparent in the refined market for the month past, and business has been comparatively very light. On the 16th the price of 70° Abel test was advanced form 6⅝c to 6¾c, which remained the asking figure for the rest of the month. Buyers were content to bid ⅛ of a cent less, and the amount of oil sold was small.

The brisk trade that was anticipated has evidently not yet been realized, though a different state of affairs is predicted for the present month. Freight rates to London are lower, but charters have shown a steady decrease.

As will be seen by the report of Vice-Consul Peacock, published elsewhere, the Russian petroleum interests are in a very precarious condition and can present no formidable competition to American refined in the Atlantic ports, so long as the present low prices are maintained.

The exports of refined, crude and naphtha, from all ports, from January 1 to September 29 have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	4,085,642	6,886,220
Phi adelphia	111,880,029	111 350,803
Baltimore	12,220,029	8,825,774
Perth Amboy	3,398,017	--------
Total	132,183,717	127,062,797
From New York	286,050,202	280,278,477
Total exports from United States	418,233,919	407,341,274

In refined for the home trade business is increasing, but prices remain unchanged. Quotations are 8½@9c. New York State legal test, 7¼@7¾c for 110° test, 8¼c. for New York city 110° flash, and 9¾c. for New York city 150° water white. Western lots are offered at 7¼c for 110° test Standard white, 7¾@8c. for 120° test Standard white, 8½@9⅛c. for 130° test Standard white, 9@9½c. for Standard test and 9½@9⅝c. for 150° test water white. Western naphtha 68° to 72° test is quoted at 7¼@7¾c. delivered in New York. The demand for refined in cases has been light, with quotations at 8½ to 9⅝c., according to brand. The clearances for September in this class of goods to China and the East amounts to 283,751 cases, a decrease of 374,585 cases from the same month in 1885. The total clearances up to September 30 are 9,546,586 cases, an increase of 1,925,551 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 30th of September, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	2,194,507	2,149,819
JAPAN	1,186,804	1,443,888
INDIA	3,016,042	2,228,685
JAVA, SINGAPORE, ETC.	3,149,233	1,798,643
Total September 30	9,546,586	7,621,035
Total August 31	9,262,835	6,962,699
Clearances for September	283,751	658,336
Clearances for August	549,916	718,533
Clearances for July	1,028,427	846,668
Clearances for June	1,419,352	1,116,314
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	9 546,586	7,621,035

REFINED QUOTATIONS FOR SEPTEMBER.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	6⅝	6⅝	6⅝	5⅝	6.20	15½
2	6⅝	6⅝	6⅝	5⅝	6.20	15½
3	6⅝	6⅝	6⅝	5⅝	6.20	15½
4	6⅝	6⅝	6⅝	5⅝	6.20	15⅝
5						
6	6⅝	6⅝	6⅝	5⅝	6.20	15⅝
7	6⅝	6⅝	6⅝	5⅝	6 25	15⅝
8	6⅝	6⅝	6⅝	5½	6.20	15⅝
9	6⅝	6⅝	6⅝	5½	6.20	15⅝
10	6⅝	6⅝	6⅝	5½	6.20	15⅝
11	6⅝	6⅝	6⅝	5½	6.20	15⅝
12						
13	6⅝	6⅝	6⅝	5⅝	6.20	15⅝
14	6⅝	6⅝	6⅝	5⅝	6.20	15⅝
15	6⅝	6⅝	6⅝	5⅝	6.20	15⅝
16	6¾	6¾	6¾	5⅝	6.30	15⅞
17	6¾	6¾	6¾	5⅝	6 30	15⅞
18	6¾	6¾	6¾	5⅝	6.30	15⅞
19						
20	6¾	6¾	6¾	5⅝	6.30	15⅞
21	6¾	6¾	6¾	5⅝	6 30	15⅞
22	6¾	6¾	6¾	5⅝	6.30	15⅞
23	6¾	6¾	6¾	5⅝	6.30	15⅞
24	6¾	6¾	6¾	5⅝	6.30	15⅞
25	6¾	6¾	6¾	5⅝	6.25	15⅞
26						
27	6¾	6¾	6¾	5½	6.25	15⅜
28	6¾	6¾	6¾	5½	6.20	15⅜
29	6¾	6¾	6¾	5½	6.20	15⅜
30	6¾	6¾	6¾	5½	6.20	15⅜

Notes on Natural Gas.

The Grapeville Natural Gas Company, recently chartered, proposes to produce gas in Penn and Hempfield townships, Westmoreland county, and to supply it to consumers in Allegheny and Westmoreland counties. The stockholders are H. J. Brunot, George F. Huff, Richard Coulter and C. N. Stark, Greensburg; W. R. Haymaker, Murraysville. The capital stock of the company is $100,000.

The American Gas Improvement Company, Limited, Pittsburgh, is the sole owner of the patents issued during the last two years to John McKay, of Titusville, and J. M. Critchlow, of Beaver Falls, Pa., having reference to the decomposition and treatment of natural gas for illuminating purposes. Beaver Falls and New Brighton have been using this gas exclusively for nineteen months, Titusville, Pa., for over a year, and works are now being erected at Meadville and Warren, Pa., and other places in Ohio and New York State. The managers of the company are Mr. W. H. Denniston, East End; Dr. W. B. Roberts, E. T. Roberts and John McKay, of Titusville, and J M. Critchlow; of Beaver Falls.

The Knickerbocker Brewing Company, of Sandusky, Ohio, on October 2d, struck a flow of gas at a depth of 280 feet, which threw the mud and water forty feet high. It was thought to be a surface vein. A pipe has been placed over it and a flame thirty feet high is now burning.

The Council of the city of Youngstown, Ohio, appointed Thomas J. Lee, a special committee, to investigate and report as to what interest, if any, the Standard Oil Company had in the Mahoning Gas Fuel Company. On October 4th Mr. Lee reported that he was convinced that the Standard had some interest in said company. The report was filed and Council showed its appreciation of it by every member, except Mr. Lee, adopting an ordinance allowing the Mahoning Gas Fuel Company to open the paved streets and lay its mains, giving it all the privileges asked for. The city will be supplied with natural gas before the close of October. The Columbia Gas Company has its pipe laid to the Ohio State line, from which point the Mahoning Gas Fuel Company connects with Youngsville.

The Royal Gas Company has completed its lines, and is now furnishing gas to the glass houses and other manufacturers in Steubenville, Wellsburg, Mingo and Brilliant, Ohio. It has three wells down in the Hickory region, Washington county, only one of which has been turned into the pipe line, and it affords sufficient pressure to deliver the gas in satisfactory quantities. The line is eighteen miles in length and crosses the Ohio river at several points. The company has leased over 2000 acres of gas land in Washington county.

The Lawrence Natural Gas Company, capital $1,000,000, has been incorporated at Harrisburg. This company will supply natural gas to Greenville, Sharon, New Castle and other towns in Mercer and Lawrence counties, and wiil eventually extend its lines to Youngstown, Girard, Niles and Warren, Ohio. The pipe line runs from Hope township, Beaver county, through Beaver and Lawrence to North Beaver, thence to New Castle, Sharon and Greenville. The principal stockholders of the company are D. O'Day, Buffalo; W. T. Scheide, C. N. Payne and Joseph Seep, Titusville; John R. Campbell, H. McSweeny, Charles A. Lay, W. and A. Pitcairn, Oil City; George W. Colton and Joseph Bushnell, New York.

The American Well Drilling Company, of Bradford, is sinking test wells for gas at the works of the Swift Iron and Steel Company, Cincinnati, and putting down wells at Eaton for the Eaton Natural Gas Company.

The East Pennsylvania Oil and Gas Company will drill a well near Paradise, on the line of the Port Jervis & Monticello Railroad.

THE PETROLEUM AGE,
DEVOTED TO THE
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THE PRODUCING REGION.

At the beginning of September there were 142 new rigs and 318 drilling wells in the New York and Pennsylvania oil regions, a total of 460. The number of wells completed in September was 253, with an estimated new production of 13,540 barrels. The dry holes numbered 36, leaving 217 productive wells, with an average yield of 62 barrels. During August the entire region completed 286 productive wells and 42 dry holes, and the average of the new wells August 31 was 48 barrels. The September figures show a decrease of 77 wells and of 250 barrels in the new production. The average of the September wells is the highest recorded in an oil report for many years. The figures are brought up by the new wells of Washington and Shoustown, both of which were the scenes of important developments in September. At the close of September there were 121 new rigs, 138 old rigs and 322 drilling wells in the entire region, a total of 581, as compared with 142 new rigs, 142 old rigs and 318 drilling wells, a total of 602 at the end of August. This is a decrease of 21 new rigs, 4 old rigs and an increase of 4 wells drilling, or a total decline of 21 in active operations from the month preceding.

ALLEGANY FIELD.

There were only 9 wells completed in the Allegany field in September, including one gas well; the new production was 54 barrels. In August 17 wells were completed with an estimated yield of 96 barrels. The well drilled by the Allegany Gas Company, on lot 61, Wirt, yielded the volatile hydro-carbon which the company was seeking. For the last day of September there were 5 new rigs, 39 old rigs and 16 drilling wells in the field, a decline of 4 rigs and an increase of 5 drilling wells over the month preceding. The Allegany pipe line runs averaged 6035 barrels a day in September, 6333 barrels in August, 6802 barrels in July, and 6981 barrels in June. The average daily runs for September one year ago were 6647 barrels; for September, 1884, 9989 barrels, and for September, 1883, 12,358 barrels. The story that the Anchor Oil Company had been pulling out any of its wells in the Allegany field is false.

THE BRADFORD FIELD.

The Bradford field records but one dry hole in September, and that was on the Mack lands, up the West Branch. Twenty-one productive wells were completed with a yield of 160 barrels. In August 23 producing wells were added to the list, with an output of 145 barrels. The figures on operations show a decline for September of 10 rigs, old and new, and an increase of 1 drilling well, making the total 9 less than at the close of August. The old field hangs on to its production with a death like grip, as is shown by the pipe line runs, which were 26,394 barrels a day in September, 26,785 barrels in August, 27,587 barrels in July, and 28,790 barrels in June. For September, 1885, the runs were 30,151 barrels; for September, 1884, 33,449 barrels; for September, 1883, 35,894, and for September, 1882, 46,585 barrels. In September, 1880, the field had an estimated daily production of 70,000 barrels.

WARREN AND FOREST.

The middle field records another heavy decrease in operations, completing 26 fewer wells in September than in August, with a decrease in the new production of 578 barrels. In work under way there is a decrease of 15 new rigs, 3 old rigs and 8 drilling wells, a total of 26.

KINZUA VILLAGE.—Morse & Collins' No. 5, on the Weed lands, warrant 5563, proved a very small well, when compared with the other wells of this firm on the west side of the river, and the outlook for a prolific pool of extensive area appears less promising. The Anchor Oil Company has started its No. 12 well, on the Morrison lands, and T. G. Phillips has a test well near the sand in the Sugar Run region, on the Richardson lands.

CLARENDON AND TIONA.—The venture of Ed O'Donnell, on the Herzell lands, between the northern part of the Stoneham field and the eastern edge of the Wardwell belt, was a dry hole. Only eleven strings of tools are at work, in the close sand area, that stretches from Stoneham, through Clarendon and Tiona, to Farnsworth's Siding. J. A. Waterhouse & Co. have purchased lot 556 of C. A. & D. Cornen, and will proceed at once to drill over the undeveloped portion. Lew Kraeer, the active contractor for Horton, Crary & Co., is gradually retiring his tools for the winter season. On the extreme south Pickett & Stone and Hackett & Shirley each have a well drilling.

A new well was completed in the Cherry Grove district, on lot 619, in September. All the wells in this district have been worked with the gas pump, so long that there is a strong suction on the whole field. When this well was twelve feet in the sand all the water poured in the well, to drill with, was sucked back into the rock, and the flame of a lighted match held at the casing head was drawn down the hole. It was shot and is rated as a small producer.

COOPER AND BALLTOWN.—Haight, Agnew & Co. are drilling their sixth well on warrant 3198, near Gusher City, and some Bradford parties are drilling on lot 407, immediately north of Cochran Bros'. north line. The latter is located on doubtful territory and is almost certain to prove a duster. At Balltown May, Kelly & Grandin have finished a dry hole about 300 feet northwest of their old No. 1 duster. It was put down to a depth of 2500 feet. At 1930 feet what was called the Bradford sand was found. After standing twenty-four hours the well filled up 150 feet with oil from this sand, and it was thought that a good shot might have converted it into a small producer. At the close of the month no wells were drilling in the Balltown field. The pipe line runs from the Cooper district averaged 482 barrels in September and 558 barrels in August, while from Balltown they were 913 barrels a day in September and 800 barrels in August.

KANE.—The Kane field still affords attractions for a few conservative oil firms, who have been quite active in developing the northern portion. Treat & Mallory's venture on 344 found a good looking sand and started at about 50 barrels for the first twenty-four hours. The Forlorn Hope Oil Company is drilling a venture a half mile further to the north on lot 341, and Treat & Mallory have a second well under way on 344. Clinton & Swayne's No. 2, on 345, at last accounts was still fishing at a depth of 1900 feet. Kane completed 29 wells in

September, 39 in August, 62 in July, and 52 in June. On the last of September the field record showed 5 rigs and 33 wells drilling and under way. The runs from the Kane field averaged 4709 barrels a day in September, 4842 barrels in August, 5321 barrels in July, and 5702 barrels in June.

GRAND VALLEY.—The well on lot 138, near Selkirk, after pumping salt water for several weeks has been pulled out and abandoned. Whaley & Zane completed a small gas well on lot 146, on the west side of the field. Very little work of an experimental nature is in progress. Cadwallader & Co.'s well, on lot 151, is a small producer and shows that a further extension to the southwest may be expected. The field as now developed has a length in a northeast and southwest direction of a little over five miles. The production of the field as shown by the pipe line runs was 2010 barrels a day in September, 1770 barrels in August, and 1481 barrels in July. Thirty-three new wells were completed in September with a new production of 331 barrels, and the record at the close of the month showed 17 rigs and 20 drilling wells in progress.

ELK COUNTY, ETC,—Nothing new has occurred in the region southwest of Kane the past month. M. J. Feeley & Co.'s No. 2, on warrant 3661, in Forest county, is shut down in the sand, while the owners are warring among themselves over the right of first information in regard to results. S. B. Hughes & Co. have two wells drilling in the vicinity of their No. 1, on 3663, east of the Forest county line. The Armstrong & Bogg's well, on 3665, reported as dry will be drilled deeper after their well on 2032 is completed. Barnsdall, Clark & Foster are starting a well on 2033; John Markham is doing the same on the southeast corner of 3671, and Sill & O'Dell are drilling on warrant 3779. Cornwall & Roth have another test well under way in Forest county, on warrant 5134, north of their dry holes in the same locality. Alshouse & Co. have completed their third gas well on 2824. The product is found in the Speechley sand rock and will be piped to Tionesta. Parker & Nelson have completed a duster at Dunn's Eddy, on the Allegheny river, south of Irvineton. Ford & Co. are drilling on the McKinney farm, uear Youngsville, and Jonathan Watson, one of the pioneers of Oil Creek, in the early days of petroleum, is starting a well on the York farm. The National Transit Company completed four gas wells in September in the southern part of McKean county for the Buffalo Natural Gas enterprise.

THE LOWER COUNTRY.

About one-half the whole number of wells completed in September and 90 per cent. of the new production is furnished by the lower country. Shoustown and Washington together are responsible for 32 wells and over 10,000 barrels of the fresh yield. On the last day of September the lower country had 67 new rigs and 199 drilling wells, as compared with 66 new rigs and 193 drilling wells on the 31st of August.

VENANGO.—The subject of greatest interest at present in the Venango county field is the deepening of the dry holes on the northwest of the Tarkill pool to the Speechley sand horizon. The Duncan well is still pumping salt water from this rock, and Canning & Goettell have a plentiful supply at their No. 8, of the same fluid from the same rock. This well was located 200 feet west of their line of gusher wells, and was barren of oil in the Tarkill sand; it found 105 feet of the Speechley rock. The Kugler well, farther to the northwest, has also been drilled to the Speechley sand, and is likewise a salt water producer. The Fleming well, on the Sam Hill, is a heavy gasser and has been sold to the Oil City Fuel Supply Company. The southeastern portion of the Tarkill district is quite active. Barnum & Co.'s venture, on lot 4, of the Lloyd lands, which was seeking an outlet for this pool on the extreme southeast poved a failure and is being drilled to the Speechley sand. The Excelsior Pipe Line commenced running oil from the Tarkill field in September, and the product of the pool now commands a premium of 15 cents a barrel above the market rates. The runs by the National Transit Company from this field averaged 2258 barrels a day in September, 3756 barrels in August, 4038 barrels in July, and 1262 barrels in June.

Tipperary shows considerable activity and operations are increasing at Red Valley. The daily runs from this field have averaged as follows: January 783 barrels, February 1017, March 1206, April 1231, May 1260, June 1039, August 940 and September 899. The total runs from this district to September 30 amount to 329,541 barrels.

There were 40 wells completed in Venango in September with a new production of 405 barrels. This is a drop of 38 wells and 1450 barrels production from the August figures. The totals of rigs and drilling wells foot up the same at the close of both months.

CLARION —The Clarion field is becoming of less importance from month to month. But 14 wells were completed in September, and 3 of these were failures as oil producers. The Paint Mills section, northeast of Shippenville, is of insignificant proportions; the 12 producing wells there having a joint production of only 31 barrels. Wells are being drilled for gas at Mechanicsville and near the Cherry Run camp-meeting ground. John Deitrich & Co. are drilling a test well at Corsica, in the eastern part of the county. The pipe line runs of the Cogley field averaged a little above 2000 barrels a day in September. For the last of the month there were 16 rigs, old and new, and 10 drilling wells in the Clarion field.

BUTLER AND ARMSTRONG.—The district opened by the strike of Painter Bros., at Reibold Station, during the closing days of the Thorn Creek excitement, is just now attracting considerable attention, through the success of Phillips Bros., on the Slater and Critchlow farms. Four wells have been drilled into the sand since the first of the month, which will start at 150 barrels each or better. Critchlow, No. 2, made 120 barrels the first eighteen hours, and Slater, No. 1. is showing for 200 barrels, while No. 2 is rated somewhat less. McJunkin & Co.'s No. 1, on the S. H. Critchlow farm, is likewise showing for a good well. Up the creek from the station, and about 180 rods due east of the Critchlow wells, Lockwood, Tabor & Co. are drilling on the J. Holstein farm. The Leidecker mystery, on the Galesbaugh farm, near Glade Run, about a mile and a half in a southwesterly direction, is admitted to be a failure.

In the southeastern end of the Thorn Creek district six wells were finished in September. Sam Armstrong found a two barrel well on the Bulford farm, where he was looking for something better, while the venture of Shetter, McKelvey & Co., on the Miller farm, turned out a dry hole. The other wells ranged from 12 to 50 barrels productive calibre. Nine wells were drilling in this district at the close of the month.

Drilling operations are gradually being decreased along the narrow belt that runs southerly from the wells on the Ort farm, east of Millerstown, and the eastern boundary line of the productive streak seems pretty clearly defined. Westerman & Co.'s well, on the Church

lot, about thirty-five rods east of Showalter Bros. & Hartman's 8-barrel well, on the same lot, is a failure and Father Quilter & Co.'s well, on the McCue farm, north of the Church lot, is another. W. S. Guffey & Co. are drilling a test well on the George Rogers farm, between the Ort pool and the Broomfield district. The Shenango and Butler Gas Companies are drilling for gas in the vicinity of Butler, and Sam Boyd is about making a test for oil in the same region. There were 37 wells completed in the Butler and Armstrong division of the Lower Country in September, with a yield of 1059 barrels, and at the close of the month there were 19 rigs and 40 drilling wells, as compared with 26 rigs and 45 drilling wells at the close of the preceding month.

SHOUSTOWN.

September proved an important month in the history of the Shoustown field. Eleven new wells were added to the list with a new production on the last day of the month of 2845 barrels. The Solar, No. 10, on the A. P. Morrow farm, was drilled into the sand on the 29th with a very poor showing, but on the following day it started up at 85 barrels an hour. Solar, No. 7, which from its location was considered likely to be an average well, had an estimated production of 750 barrels on the last of the month. The large strike at the Marks well was thought to give the budding field a decided north and south line, but the developments since the first of the month have discouraged the idea of any large extension northward. The Galey well, on the Milo Twyford farm, completed October 5, only 280 rods due north of the Marks gusher, turned out an immense gasser. The Grace & Brown well, on the Mary McAllister farm, 100 rods northwest of the Marks, started at about 50 barrels the first day and was stimulated by a shot on the 5th instant to 19 barrels an hour. Solar, No. 11, one location south of the Marks, started at 80 barrels an hour, and on the 11th was reported at 37 barrels an hour. The pipe line runs from the field averaged 2093 barrels a day in September and 1209 barrels in August. Sixteen new rigs were up and building and 24 wells drilling September 30.

WASHINGTON.

The production of the Washington field as shown by the pipe line runs averaged 13,143 barrels a day in September. This is an increase of 2420 barrels over August, and the greatest average yet attained by this white sand pool. Eighteen productive wells were completed in September with a new production of 7710 barrels. The Chartiers Oil Company's well, on the Forest lot, near the northeastern limits of the borough, was a failure. This was the only dry hole within the proper scope of the Washington territory completed in September. It adds one more proof of the fact that the residents of the peaceful old county seat have not been sleeping these many years over an immense subterranean reservoir of crude oil, as the numerous owners of the village lots have for a long time fondly believed. The well on the Hart lot, 500 feet south of the Forest duster, showed some oil in the Gantz sand, but was dry in the "fifty-foot" and Gordon rocks. The Ten-Mile Oil Company's venture, on the Maloy, proved a heavy gasser from the "fifty-foot," but was destitute of oil. The Nail City Oil Company's well, on the Shrontz farm, one mile southeast of the borough, is through the Gantz sand with a dusty showing. The P. L. & H. Co.'s No. 3, on the Hess farm, in the Gordon pool, at the western end of the field, on a line between Thayer, No. 2, and Hall, No. 2, has been drilled through the Gordon sand and is a small producer from the "fifty-foot." Its present yield is 20 barrels a day. Hess, No. 4, is through the Gordon sand and doing 30 barrels a day. The Forest Oil Company's No. 5, on the southwestern corner of the Barre farm, reached the pay streak September 28, and started at 125 barrels an hour. Its production for twenty-four hours ending on the morning of the 9th instant, was 900 barrels. Pipe liue connections have been made to the Taylorstown well and the present production is reliably reported at 40 barrels a day. The well of Robbins & Co., on the Donaldson farm, one and one-fourth miles north of the Taylorstown well, is shut down near the top of the Gordon sand. The McGahey well was drilled through 32 feet of Gantz sand, 6 feet of slate and 47 feet of "fifty-foot," making a total of 85 feet from the top of the Gantz sand. It had a natural production of 130 barrels per day. After being torpedoed it started at 30 barrels per hour, and on Saturday, October 9 the gauge showed it to be producing 240 barrels. Seventeen wells have been started on a line beyond and between it and the large wells of the Smith pool, but none of them are due until December. Thus while the Gordon end of the field appears on the down grade and not likely to furnish any further increase in production future possibilities hang on the Smith McGahey portion. An important test is near the proper depth for the Gordon sand, on the Price farm, midway between Taylorstown and the west end of the Washington field. At this writing there are twenty wells that have reached a depth of 2000 feet or over and most of them will be heard from before the close of the month.

Below is a list of all wells in the field which were producing September 11th, with their production on that date and the same wells with new ones added to the list with their yield on October 9th:

Farm.	Operator.		Produc. Sept. 11. Barrels.	Produc. Oct. 9. Barrels.
Gordon,	P. L. & H. Co.,	No. 1	35	20
"	"	No. 2	--	--
"	"	No. 4	100	45
"	"	No. 5	110	60
Hess,	"	No. 2	10	12
"	"	No. 3	20	20
"	"	No. 4	40	30
Gantz,	Citizens' Oil & Gas Co.,	No. 1	30	30
Weaver,	"	No. 3	10	8
Weirich,	Forest Oil Co,	No. 1	10	12
"	"	No. 2	18	15
Barre,	"	No. 1	283	142
"	"	No. 2	137	--
"	"	No. 3	502	240
"	"	No. 4	--	120
"	"	No. 5	--	900
"	"	No. 6	--	60
Hall,	"	No. 1	5	2
"	"	No. 2	260	200
"	"	No. 3	40	25
Curry,	"	No. 1	30	10
Taylor,	Union Oil Co.,	No. 1	250	195
"	"	No. 2	--	75
"	"	No. 3	800	330
"	"	No. 4	594	350
McGovern,	"	No. 1	23	23
Clark,	"	No. 1	20	25
Morgan,	"	No. 1	794	600
Davis,	"	No. 1	171	565
"	"	No. 2	1900	1300
Linn,	Coast & Co.,	No. 2	200	263
Weirich,	"	No. 1	15	15
Hayes,	"	No. 1	10	10
Lead Works Lot,	McKeever & Mulholland,	No. 1	13	10
"	Marsh & Caldwell,	No. 1	13	12
Smith,	Willets, Young, Craig & Co.,	No. 1	90	62
"	"	No 3	425	182
Cameron,	"	No. 1	327	489
"	"	No. 2	38	22
"	"	No. 4	--	63
"	"	No. 5	--	493
"	"	No. 6	50	--
"	"	No. 7	--	--
Shirls,	Shirls.	No. 1	87	--
"	"	No. 2	45	30
"	"	No. 3	10	12
Stewart,	Fisher Oil Co		1056	453
Miller,	Guffey & Co.,	No. 1	65	50
Hall,	Guffey & Co.,	No. 1	20	15
Manifold,	Pew & Emerson,	No. 1	90	125
"	"	No. 2	50	55
Gabby,	"	No. 1	5	5
Clark,	Thayer & Co.,	No. 1	30	14
"	"	No. 2	180	218
"	"	No. 3	230	87
"	"	No. 4	30	156

	Produc. Sept. 11. Barrels.	Produc. Oct. 9. Barrels.
Clark, Thayer & Co., No. 5	--	240
Munce, Willets & Son, No. 1	268	145
" " No. 2	20	10
" " No. 3	245	170
" " No. 4	48	25
" " No. 5	40	13
" " No. 7	770	360
" " No. 8	--	405
" " No. 9	504	936
" " No. 10	--	720
" " No. 11	--	--
" " No 12	--	1152
Montgomery, J. L. McKinney & Co. & Robbins, No. 1	18	20
Taylor, Galligan & Co., No. 1	80	100
Clark, Hallam & Co., No. 1	35	--
Wiley, Munhall & Co., No. 1	40	16
" " No. 2	60	16
Vandergrift, Taylorstown, No. 1	shut in	40
Munce, John McKeown, No. 1	--	
" " No. 2	130	
" " No. 3	450	1000
" " No. 4	116	
" " No. 5	270	
" " No. 6	265	
Fair Ground, Wheeling Oil Co., No. 1	408	720
McGahey, Mascot Oil Co.,	120	240
Zelt, Associated Producers, No. 2	10	10
Miller, Reed & Co	--	768
Weaver, Hart Bros	--	--

Date.	No. wells.	Production.
September 11	70	13,275
October 9	85	15,361
Increase	15	2,086

The Macksburg Field in August and September.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2186
April	64,137	7890	2401
May	58,596	6630	2104
June	65,379	2871	2275
July	58,410	4080	2016
August	57,492	2790	1945
September	48,918	1240	1672

During August 5 wells were completed in Macksburg with a production of 45 barrels, and on August 31 there were 10 drilling wells and 8 rigs up and building in the field. Three of the deep wells on Goose Run, one of Boden & Aiken and two of Decker & Sons, were abandoned and pulled out. They were among the first drilled and were small from the start.

In September 6 wells were completed with an output of 35 barrels a day, and on the last day of that month there were 7 rigs up and building and 6 wells drilling. Three of the rigs standing on the last of August were abandoned. On September 30 the number of producing wells in the Macksburg field was 451, with an average daily yield of 3.7 barrels each.

The dry holes completed in this part of Ohio during the month were one on Buel's Run, two miles southwest of Elba, one drilled through the Macksburg sand, at Quaker City, on the line between Belmont and Guernsey counties, and one through the same sand in Muskingum county, four miles southeast of Zanesville. Both of these wells had a little salt water in the sand and very little gas.

At Eureka, West Virginia, Boss & Brown have all the rope out of their well and are spudding around the tools. The well is showing some oil, making a couple small flows every day, perhaps a barrel or two in all. F. R. Rose is down about 900 feet and casing off salt water at that depth. Harry Hyland has a rig up and Tom Mills, on his lease of 200 acres, is about to commence building a rig.

Crude Market for September.

Notwithstanding the fact that the statistics on production and consumption continued of a decidedly bearish cast the market obstinately refused to be crowded into the fifties during the month recently closed. Stocks in the custody of the pipe lines seem likely to increase for some time to come, and the outsider sees little encouragement in the crude market to induce him to come in as an investor in certificates. Consequently trading in the different Exchanges has been light and is confied mostly among the brokers, who are engaged in manipulating profits out of short turns in the fractions. The situation in the field hinges entirely upon results in the gusher territory of the southwest. Shannopin or Shoustown will doubtless reach the summit of its powers within the next thirty or sixty days, while Washington is drilled so slowly and has been the scene of so many surprises that predictions in regard to its future are not rashly hazarded. The Gordon end of the belt appears to be pretty well defined, while the Smith portion remains capable of farther possibilities. The McGahey part of the field will not have its second well in the sand before December. In the meantime other parts of this phenomenal county may be found capable of supplying the world with cheap crude.

The month of September opened with the crude market at 61⅞c and 62c and, closed with the figures at 62⅜c and 62½c. Save for one or two short lived little booms that were forced on the occasion of variations in the gauge of the Washington wells, there was little interest or animation manifested in its course. Twice during the month, on the 16th and on the 20th, 66c was reached, the highest price, and on the 3d 61¼c was touched, which was the lowest for the month. The lowest quotation for August was 59½c and the highest 66c.

The range of prices for September was 4¾c as compared with 6½c in August, 3⅞c in July, 8¾c in June, and 12⅝c in May. The average price on the floor of the Bradford Exchange was 63⅜c in September, 62c in August, 66c in July, 67c in June, 69⅞c in May, 74c in April, 77⅛c in March, and 80c in February. The average price for September one year ago was $1.00¾.

THE CLEARANCES.

	September. Barrels.	August. Barrels.
Bradford Oil Exchange	26,000,000	29,286,000
Oil City "	68,000,000	73,234,000
New York Consolidated Exchange	152,345,000	167,894,000
Pittsburgh Petroleum Exchange	56,024,000	63,415,000
Philadelphia Oil Exchange	13,704,000	14,468,000
Total	316,073,000	348,297,000

THE Bellevue Natural Gas Company, composed of the Guffey Bros. and others, is putting down a second well on Neville Island, and is vigorously pushing the work of pipe laying. Bellevue and Gleufield will be enjoying the use of natural gas before the close of the present month.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO SEPTEMBER 30, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146,587	8,810	------	155,397	5,180
December	98,582	17,342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,353	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,546	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87,193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107.514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67,883	151,913	4,900
September	19,590	64,648	63,453	147,691	4,923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25,469	62,262	2,224
March	11,558	26,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71.459	2,305
June	10,324	18,154	33,126	61,604	2,053
July	10,731	18,050	35,976	64,757	2,089
August	9,305	17,289	24,788	51,382	1,657
September	7,671	14,465	27,384	49,520	1,651
Tot'l Sept. 30 '86	3,589,546	2,630,508	2.218,832	8,438,886	5,228

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district to September 30, 1886. Cherry Grove has produced 3,589,546 barrels, Cooper 2,630,508, and Balltown 2,218,832 barrels. The daily average runs from the three fields during September were 1651 barrels, a decrease of 6 barrels from the August figures.

The daily average runs from the Cooper and Henry's Mills section for September were 482 barrels, August 558 barrels, July 582 barrels, June 605 barrels, May 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, and for January 623 barrels.

The Balltown field had a daily average of 913 barrels in September, 800 barrels in August, 1161 barrels in July, 1104 barrels in June, 1376 barrels in May, 832 barrels in April, 1059 barrels in March, 1056 barrels in February, and 1063 barrels in January. Cherry Grove averaged 256 barrels in September, 300 barrels in August, 346 barrels in July, 344 barrels in June, 338 barrels in May, 347 barrels in April, 353 barrels in March, 305 barrels in February, and 306 barrels in January.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to August 31, 1886, inclusive, has been 8,438,886 barrels, a total daily average of 5228 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUNS.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
September	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270,644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239		
April	280,005	9,333		
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
Jannary, 1886	39,933	1,288	138,549	4,469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108.541	3,618
May	37,752	1,218	100,994	3,258
June	40,167	1,339	88,082	2,936
July	40,631	1 311	77,584	2,503
August	42,097	1,358	67,405	2,174
September	41,652	1,388	60,140	2,004

For the seventeen months ending with September 30, the Cogley oil field has produced 1,572,710 barrels of oil, a daily average of 3126 barrels. The daily average for 473 days ending August 31, was 3198 barrels. There has been a steady decline in the production of the Cogley field, since last November, in which month the maximum output was attained. The decrease since that time amounts to 3412 barrels, in the daily average. The Thorn Creek and Baldridge runs averaged 1388 barrels a day in September, 1358 barrels a day in August, 1311 barrels a day in July, 1339 barrels in June, 1218 barrels in May, 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January. This is exclusive of the runs by the Pittsburgh Pipe Lines, which take about 500 barrels a day from the St. Joe and Thorn Creek districts.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 30th of September had produced 333,358 barrels; a daily average for 365 days of 913 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April, 915 barrels a day in May, 1262 barrels a day in June, 4038 barrels a day in July, 3756 barrels a day in August, 2258 barrels a day in September. The September runs are exclusive of the oil taken by the Excelsior Pipe Line, which commenced running oil from this field the past month. The Pontius or McKeever pool, in Butler county, produced 84,126 barrels in September, 85,331 barrels in August, 70,458 barrels in July and 70,489 barrels in June.

THE Chicopee Natural Gas Company has been absorbed by the Pennsylvania Gas Company and the lines connected. The Chicopee owned four wells and considerable territory at Murraysville.

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	September, 1886. Wells.	Prod'n.	Dry.	August, 1886. Wells.	Prod'n.	Dry.
Scio	0	0	0	1	5	0
Alma	1	2	0	3	13	0
Wirt	3	15	1	6	35	1
Bolivar	0	0	0	0	0	0
Clarksville	5	37	0	7	43	0
Genesee	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Total	9	54	1	17	96	1

BRADFORD FIELD.

Division of Field.	September, 1886. Wells.	Prod'n.	Dry.	August, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	5	27	1	9	53	0
Kendall Creek	3	18	0	1	6	0
Foster Brook	3	17	0	3	16	0
Knapp's Creek	0	0	0	4	13	1
Four Mile	2	16	0	0	0	0
Indian & Meeks Creeks	5	40	0	4	30	0
Cole Creek	3	34	0	3	20	1
Kinzua	1	8	0	2	7	1
Miscellaneous	0	0	0	2	0	2
Total	22	160	1	28	145	5

WARREN AND FOREST.

District.	September, 1886. Wells.	Prod n.	Dry.	August, 1886. Wells.	Prod'n.	Dry.
Glade	4	30	0	5	15	2
Clarendon	14	73	1	13	69	0
Tiona	8	50	0	12	64	0
Cooper	0	0	0	0	0	0
Balltown	4	40	2	3	78	0
Kane	29	646	0	39	1020	0
Grand Valley	33	331	1	49	491	1
Miscellaneous	8	4	7	4	15	2
Total	99	1174	11	125	1752	5

LOWER COUNTRY.

District.	September, 1886. We ls.	Prod'n.	Dry.	August, 1886. Wells.	Prod'n.	Dry.
Venango	40	405	11	78	1855	15
Clarion	14	125	3	14	73	4
Butler and Armstrong	37	1059	7	36	1299	3
Washington	20	7710	2	21	6720	5
Shoustown, Etc	12	2853	0	9	1850	4
Total	123	12152	23	158	11797	31

GRAND SUMMARY.

District.	September, 1886. Wells.	Prod'n.	Dry.	August, 1886. Wells.	Prod'n.	Dry.
Al'egany	9	54	1	17	96	1
Bradford	22	160	1	28	145	5
Warren and Forest	99	1174	11	125	1752	5
Lower Field	123	12152	23	158	11797	31
Total September	253	13540	36	328	13790	42
Total August	328	13790	42			
Difference	75	250	6			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	September 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	August 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Scio	0	4	0	4	0	4	0	4
Alma	1	6	1	8	0	9	2	11
Wirt	3	9	5	17	2	9	3	14
Bolivar	0	4	2	6	0	4	1	5
Genesee	0	8	1	9	0	9	0	9
Clarksville	1	8	6	15	4	7	5	16
Miscellaneous	0	0	1	1	0	0	0	0
Total	5	39	16	60	6	42	11	59

BRADFORD FIELD.

Division of Field.	September 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	August 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
E. and W. Branches	1	10	8	19	6	11	6	23
Kendall Creek	0	0	1	1	0	0	2	2
Knapp's Creek	0	7	1	8	0	7	0	7
Foster Brook	1	5	1	7	1	6	1	8
Four Mile	0	3	0	3	0	4	1	5
Indian Creek	4	5	5	14	3	5	5	13
Cole Creek	0	4	1	5	0	4	3	7
Kinzua	0	0	3	3	2	1	1	4
Miscellaneous	0	0	1	1	0	0	1	1
Total	6	34	21	61	12	38	20	70

WARREN AND FOREST.

Division of Field.	September 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	August 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	4	0	5	9	0	2	4	6
Clarendon	6	2	7	15	4	3	9	16
Tiona	3	7	4	14	7	6	8	21
Cooper	0	2	2	4	0	2	0	2
Balltown	2	2	0	4	0	3	2	5
Kane	5	0	33	38	14	0	39	53
Grand Valley	17	0	20	37	26	0	19	45
Miscellaneous	6	0	15	21	7	0	13	20
Total	43	13	86	142	58	16	94	168

LOWER COUNTRY.

Division of Field.	September 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	August 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	15	10	37	62	13	13	36	62
Clarion	6	10	13	29	0	9	15	24
Butler & Armstrong	12	7	40	59	21	5	45	71
Washington	17	10	80	107	17	10	70	97
Shoustown, Etc	17	15	29	61	15	9	27	51
Total	67	52	199	318	66	46	193	305

GRAND SUMMARY.

Field.	September 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	August 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	5	39	16	60	6	42	11	59
Bradford	6	34	21	61	12	38	20	70
Warren and Forest	43	13	86	142	58	16	94	168
Low r Country	67	52	199	318	66	46	193	305
Total	121	138	322	581	142	142	318	602
Total Aug. 31	142	142	318	602				
Difference	21	4	4	21				

Summary of Daily Pipe Line Runs for September and August, 1886.

The following table shows at a glance the pipe line runs for September and August and the increase or decrease from each section. The estimate for Baldridge is based upon the runs of the National Transit Company, which were 1388 barrels in September, and an approximate estimate of the Pittsburgh Pipe Line, which includes all the oil run from Butler county, under one head. The Tarkill runs for September are short by the amount taken by the Excelsior Pipe Line, which commenced running oil in this section the latter part of the month:

	Sept.	Aug.	Increase.	Decrease.
Allegany	6,035	6,333	----	298
Bradford	26,394	26,785	----	391
Cherry Grove	256	300	----	44
Balltown	913	800	113	----
Cooper	482	558	----	76
Baldridge, estimated	1,876	1,750	126	----
Kane	4,709	4,842	----	133
Grand Valley	2,010	1,770	140	----
Cogley	2,004	2,174	----	170
Tarkill	2,258	3,756	----	1,498
Red Valley	899	940	----	41
Pontius	2,804	2,752	52	----
Washington	13,143	10,723	2,420	----
Shannopin	2,093	1,209	884	----
Smith's Ferry	9	15	----	6
Macksburg	1,630	1,855	----	225
Other fields	12,105	12,173	----	68
Total	79,620	78,735	3,835	2,950
Lima	2,348	1,613	2,950	----
Total with Lima	81,968	80,348	885	----

THE total exports of petroleum from America, in gallons, according to a German circular, from January 1 to September 3, have been as follows:

	1886. Gallons.	1885. Gallons.
To Europe	260,429,092	259,096,584
To East Indies, etc	97,684,713	77,635,018
Total	358,113,805	336,731,60

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	Sept. 18, 1886. Barrels.	August 21, 1886 Barrels.
Seven Continental Ports	1,315,733	1,337,065
London	185,549	203,526
Trieste	29,683	30,587
Total Stocks afloat and ashore	1,530,965	1,571,178
Decrease in stocks since Aug. 21	40,213	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS SEPTEMBER 18, 1886.

PORTS.	Stocks week ending Sept. 18.		Stocks afloat week ending Sept. 18.		Loading. ending Sept. 18.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	114,011	120,917	39,316	41,632	65,650	23,000	218,977	185,549	108,554	51,216	99,769	99,960
Trieste	22,378	16,110	7,445	10,573	.....	3,000	30,023	29,683	22,526	.....	12,639	.....
Bremen	462,186	238,525	22,003	4,286	26,000	25,000	510,189	267,811	163,464	162,711	149,348	135,562
Hamburg	191,874	174,117	9[illegible],542	88,206	90,000	43,100	378,816	305,423	262,361	260,754	251,329	241,302
Antwerp	133,742	168,456	73,221	35,818	28,000	91,500	234,968	295,274	184,678	179,301	157,896	171,545
Rotterdam	77,075	104,688	20,211	23,727	14,000	38,000	111,286	166,415	101,316	142,349	93,238	1[illegible]9,600
Amsterdam	49,007	57,128	8,403	16,496	.....	23,900	57,410	97,524	69,555	51,324	47,919	61,674
Stettin	136,128	61,221	35,144	46,542	3,300	30,300	174,572	138,063	159,949	133,992	82,233	89,564
Danzig	36,288	8,968	.....	30,255	3,000	6,000	39,288	45,223	41,046	7,785	14,736	14,156
Total	1,086,300	813,103	254,524	244,830	165,200	257,800	1,506,024	1,315,733	982,369	938,216	796,699	833,403

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,625,931	1,354,197	1,086,300	813,103
Total afloat, " "	268,315	155,642	254,524	244,830
Total loading	258,400	361,350	165,200	257,800
Total	2,152,646	1,871,189	1,506,024	1,315,733
Afloat and loading for direct Continental Ports	.....	45,000	32,700	.....
" " " Baltic Sea, exclusive Stettin and Danzig	22,700	15,250	24,100	32,800
" " " Total Continental Ports	2,175,846	1,931,439	1,562,824	1,348,533
" " " Total London	472,283	278,738	218,977	185,549
" " " English harbors, exclusive London	142,800	82,400	33,300	152,000
Grand total	2,790,429	2,292,577	1,815,101	1,686,082

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, AUGUST, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., SEPTEMBER 9, 1886.

CUSTOMS DISTRICTS.	MINER'L, CRUDE		NAPHTHAS.		ILLUMINATING.		LUBRICATING & PARAFINE OILS.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	.....	.....	.....	.....	680,089	66,091	11,071	2,706	.....	.....	691,160	68,797
New York, N. Y	4,045,362	257,758	1,462,259	142,701	26,858,596	2,107,973	1,150,597	231,574	1,008	91	33,517,822	2,740,097
Philadelphia, Pa	2,226,133	145,924	76,259	6,101	9,083,228	675,587	18,181	2,745	.....	.....	11,403,801	830,357
Baltimore, Md.	.....	.....	.....	.....	1,937,726	138,854	.....	.....	.....	.....	1,937,726	138,854
Total for Aug., 1886	6,271,495	403,682	1,538,518	148,802	38,559,639	2,988,505	1,179,849	237,025	1,008	91	47,550,509	3,778,105
Total for Aug., 1885.	7,863,474	590,428	965,151	73,588	42,239,180	3,685,769	1,059,791	202,864	377,412	23,855	52,505,008	4,576,504
Total for 8 months ending Aug. 31, 1886	44,447,632	3,036,977	6,557,256	576,382	316,025,123	25,835,354	8,668,626	1,653,973	1,367,100	78,304	377,065,737	31,180,990
Total for 8 months ending Aug. 31, 1885.	50,086,793	3,652,498	8,917,976	689,942	301,736,026	25,353,410	8,767,662	1,745,749	4,484,634	260,037	373,993,091	31,701,636

CRUDE QUOTATIONS FOR SEPTEMBER, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
W 1	61⅞	62⅛	61½	61⅝	62	62⅛	61½	61⅝	62	62⅛	61½	61⅝	61⅞	62⅛	61½	61⅝
T 2	61¾	61⅞	61⅜	61¾	61⅞	61⅞	61½	61⅝	61¾	62	61¾	61⅝	61¾	61⅞	61⅝	61⅝
F 3	61½	61½	61¼	61⅜	61⅜	61⅝	61¼	61⅜	61¾	61¾	61¼	61⅜	61¼	61⅝	61¼	61½
S 4	61½	61⅞	61½	61⅞	61½	62⅛	61½	62	61⅝	62	61½	61⅞	61⅝	62	61⅝	61⅞
M 6	62½	63½	62½	63	62½	63⅝	62½	63	62½	63½	62½	63	62⅜	63½	62⅜	63
T 7	63	63	62⅜	62⅜	63⅛	63⅛	62⅜	63⅜	63	63	62¼	62⅜	63⅛	63⅛	62⅜	62¼
W 8	62⅛	62¼	62	62¼	62	62⅜	62	62¼	62	62¼	61⅞	62⅛	62	62¼	62	62¼
T 9	62¼	63⅜	62¼	63⅜	62⅜	63½	62¼	63⅜	62¼	63⅜	62⅛	63¼	62¼	63½	62¼	63½
F 10	63⅝	63⅝	62¾	63	63⅝	63⅝	62¾	63	63½	63¾	62⅝	63⅛	63⅝	63⅝	62¾	63
S 11	62⅞	62⅞	62¼	62½	62⅞	63	62⅜	62⅝	62⅞	63	62⅜	62⅝	63	63	62⅜	62⅝
M 13	62¼	62⅝	62¼	62¾	62½	62⅝	62¼	62⅜	62¼	62¾	62¼	62⅜	62⅜	62⅝	62¼	62⅜
T 14	62	63¼	62	63	62½	63¼	62⅜	63	62¼	63⅜	62¼	63¼	62⅜	63¼	62⅜	63
W 15	63⅛	64¾	63	64¾	63	64¾	63	64⅜	63¼	64¾	63⅛	64½	63¼	63¾	63⅛	64¼
T 16	64⅛	65⅞	64	64⅝	63⅞	66	63¾	64⅝	64⅛	66	63⅞	64⅝	64	65⅞	63⅞	64¾
F 17	64¾	65¼	64⅜	64⅜	64½	65¼	64½	64½	65	65⅜	64⅜	64½	64¾	65¼	64½	64⅝
S 18	64¼	65⅜	64	65⅛	64½	65½	64	65⅛	64½	65½	64	65¼	64½	65½	64	65⅛
M 20	65¼	65⅞	64⅝	64⅝	65⅝	66	64⅝	64⅝	65¾	66	64¾	64⅝	65⅝	66	64⅝	64⅝
T 21	64¾	65	64¼	64⅝	64⅝	65⅛	64¼	64⅝	64⅞	65⅛	64⅛	64½	64½	65⅛	64¼	64⅝
W 22	64¾	65⅝	64¾	65	64⅝	65⅝	61⅝	65	64⅞	65⅝	64¾	65	64¾	65⅝	64¾	65
T 23	64¾	65⅛	64½	64⅝	64⅞	65⅛	64⅜	64⅝	64⅞	65¼	64⅜	64⅝	64⅞	65¼	64½	64⅝
F 24	64¾	64⅞	64⅝	64¾	64⅞	64⅞	64½	64¾	64⅞	65	64½	64¾	64⅞	64⅞	64½	64¾
S 25	64¾	64⅞	64⅝	64⅞	64¾	65	64⅝	64⅞	64¾	64⅞	64½	64⅝	64⅞	65	64⅝	64⅞
M 27	65	65	63	63	65	65¼	63	63⅛	65	65	62⅞	62⅞	65⅛	65¼	63	63
T 28	63	63	62¼	62½	63⅛	63⅛	62¼	62½	62⅞	63	62⅛	62½	62⅞	63	62⅜	62⅜
W 29	62½	63	62½	62¾	62¾	63¼	62⅜	62¾	62½	63⅛	62⅜	62½	62½	63⅛	62½	62¾
T 30	62¾	62¾	62¼	62⅜	62½	63	62¼	62½	62½	62¾	62¼	62⅜	62¾	62⅞	62¼	62⅜

SEPTEMBER OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN SEPTEMBER, 1886.

Allegany Field.

Twp. Owner. Barrels.
Alma 81, Shirley & Hochstetter No 5 2
Wirt, 47, Tew, Wicks & Co No 2 5
" 61, (C Jordan) Allegany Gas Co .. gas
" 62, (Peterson) Barton, Hammond & O'Neill No 5 10
Clarksville, 5, (Lane) Lane Oil Co No 4 .. 8
" 13, (Wixon) Ackerly & Barton No 31 12
" 13, " Wixon Oil Co No 1 5
" 13, " " No 2 2
" 3, (A Jordan) Angell Oil Co No 2 10

Wells completed 9
Production 54
Dry 1

Bradford Field.

East and West Branches.

Dent, P C L & P Co No 70 8
Warrant 2268, R J Stralght No 19 10
Mack, Fink & Stover .... dry
Brown, Wood & Young No 6 3
Wagoner, W C Patterson & Co No 8 6

Kendall Creek.

Fisher, Larrabee & Whedon No 9 6
Melvin, P C L & P Co No 90 6
" " No 91 6

Foster Brook.

E T Co, E T Co No 52 6
C B & H, Mosier Bros 6
" Watson Oil Co No 47 5

Four-Mile.

Stevens, Book & Rhodes No 12 8
" A R Curtis No 7 8

Indian Creek.

Weston, J L McKinney & Co No 11 8
" Murphy, Hogan & Williams No 11 8
" Ernst, Perrin & Ramsey No 7 .. 8
Shattuck, Bussell & Johnson No 5 8
" " No 6 8

Cole Creek.

Bingham, lot 540, T J Melvin No 15 8
" 540, John McKeown No 2 .. 6
" 592, Ass'd Producers Co No 61 20

Kinzua.

Warrant 2243, Emery Oil Co No 50 8

Wells completed 22
Production 160
Dry 1

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Weed, Morse & Collins No 5 8
Willie Run, Smith, Bright & Co No 1 5

Warren, etc.

Hemlock, (Harmon) Union Oil Co No 3 .. 6
North Warren, Sanford & Jamieson No 6 10

Wells completed 4
Production 30
Dry 0

Clarendon.

Herzell, Ed O'Donnell No 2 .... dry
35, J Smith & Son No 8 6
55, O W Beatty & Bro No 49 5
55, " No 50 6
80, (Thayer) R R Armor No 16 5
463, J B McElwaine & Co No 11 5
105, Tucker & Co No 1 6
105, Hackett & Shirley No 5 6
162, J A Dower No 9 5
530, B Beckner 5
531, S Short & Son No 9 6
531, Keegan, Sage & Co No 6 5
464, Neill & Lammers No 6 5
619, (Cherry Grave) Jas Donnelly 8

Wells completed 14
Production 73
Dry 1

Tiona.

83, Fertig, McKinney & Co 6
202, Mandell Oil Co No 15 6
281, L Kraeer & Co No 8 8
281, " No 9 6
284, Hackett & Shirley No 6 5
284, Anchor Oil Co No 14 6
321, Horton, Crary & Co No 5 6
321, Pickett & Stone No 6 7

Wells completed 8
Production 50
Dry 0

Balltown.

5214, James Welsh No 7 .... dry
5215, May, Kelley & Grandin No 58 10
5215, " No 59 .... dry
3195, (Proper Reserve) Nickel Oil Co 30

Wells completed 4
Production 40
Dry 2

Kane.

380, Boston Oil Co No 1 25
380, " No 2 20
381, " No 11 20
381, " No 12 10
382, Rathbone, Mallory & Co No 2 20
382, " No 3 20
382, " No 4 20
384, (Donaldson) Shirley, H & Co No 9 .. 30
384, (Lincoln) " No 1 .. 20
385, P T Kennedy No 3 20
385, John Forest & Co No 6 30
385, " No 7 20
385, " No 8 20
420, Coast & Sons No 25 15
420, " No 32 12
421, (Mallory & Co) (S H & Co) No 12 25
421, " " No 13 4
421, (King) " No 5 30
421, " " No 6 30
421, " " No 7 25
421, (Kane) " No 1 25
426, Kane Oil Co No 35 30
426, " No 44 20
3767, Roy & Archer No 6 25
3767, Craig & Cappeau No 26 25
3767, " No 30 30
3767, " No 33 30
3767, Ass'd Producers, Craig & Cappeau No 10 20
3767, " " No 12 25

Wells completed 29
Production 646
Dry 0

Grand Valley.

Hunter, L B Wood & Co No 9 10
" " No 10 12
" " No 11 10
S W Fisher, " No 5 10
" " No 6 10
" " No 7 12
Merritt, Miller & Crippens No 14 5
Peterson, " No 5 15
" " No 6 12
186, W B Benedict & Co No 8 12
196, " No 6 10
197, Tew Bros & Co No 9 3
Phil tract, Tew Bros & Co No 5 6
Nason, D Emery & Boyer No 8 15
" " No 9 10
193, Groves & Sons No 6 5
196, Bovce & Duck No 8 10
195, (Emerson) W W Hague No 6 12
150, Nelson Farrell No 7 8
150, Fertig & Lord No 2 10
150, Brown & Wilson No 3 15
186, S W Stewart No 11 15
149, (D Pet Co) G P Kepler No 15 12
197, Bell & Hazeltine No 7 8
150 and 185, John J Carter No 13 12
150 and 185, " No 14 10
150 and 185, " No 17 12
150 and 185, " No 18 10
150 and 185, " No 19 10
151, (Leckey) Southwest Oil Co No 5 10
Putnam, Wayne Oil Co No 3 10
146, (Kinne) Whaley & Zane No 2 .... gas
187, (Zane) Fertig & Wood No 11 10

Wells completed 33
Production 331
Dry 1

Miscellaneous.

3655, (Elk) Armstrong et al .... dry
2684, National Transit Co No 16 .... gas
2684, " No 18 .... gas
2684, National Transit Co, No 19 .... gas
2675, " No 21 .... gas
Osmer Run, Horn & Morris .... dry
Rouse Estate, W Ford & Co 4
Pennsylvania House, Magee & King .... dry

Wells completed 8
Production 4
Dry 7

Lower Country.

Venango and Other Sections.

Farm. Operator. Barrels.
Hogue, Oil City Fuel Supply Co No 3 .... gas
600 Acre Tract, " .... gas
Mattern, Cornwall, Cooper & Co .... gas
Hall's Run, Geo Jack .... dry
Slab Furnace, Warner 5
Kinter, B F Brundred 4
Pioneer, H R Davis 2
McClintock, McComb Bros .... dry
Curtis, Thomas Smith No 2 6
J Buchanan, J H McCandless No 7 5
Thomas Partill, (Oil Creek twp) Anchor Oil Co .... dry
Raymilton, (Perrine) Sheasley 5
Columbia, Columbia Oil Co .... dry

Tipperary.

Moore, Beers & Co No 2 12
Moore, " No 4 10
" E & B F McCracken No 2 10
" " No 3 3
Glass, P Canning No 2 6
A Moore, A P Dale No 1 3
J Fox, Davis & Mayer 5
Reese, Reese & Co .... dry
Heckathorn, Hubbard & Co No 1 8
Siggins, Taylor, Torrey & Murphy No 2 .. 10

Tarkill.

Geo Hill, Taylor, Torrey & Murphy No 9 .. 50
Geo Hill, " No 14 .. 25
Benton, Benton Oil Co No 10 50
" " No 12 30
Houser, I H Webb & Co No 2 30
Wm Hill, Mark Hill & Shafer 20
Judge McCalmont, Canning & Goettel No 8 (Tarkill sand) .... dry
Sam Hill, Swartzfeger & Co No 2 8
W T Baum, W T Baum No 4 .... dry
Kahle, Kahle Bros No 2 25
" " No 3 20
" " No 4 20

Rockland or Red Valley.

Black, Dale Bros 5
Hetzler, Leckey & Foster No 5 20
Shippen, Frank Doty & Co .... dry

Bullion.

Bulliot, W T Baum 5

Vicinity Emlenton.

Jew tract, Thomas & Jamieson 10

Wells completed 40
Production 405
Dry 11

Clarion.

Shippen, John J Carter No 4 30
Gibbs, " No 14 18
John Moon, Deitrich & Co .... gas
Buzza, McDowell & Crawford 30
Etzel, Etzel & Co 5
Catherman, Shreifler No 2 5
Wm Strutman, Hess & Co .... dry
Peter Moul, Youkers, Smith & Corlett No 2 6
Gloss, Gloss .... dry
Geo Booth, P F Kribbs 10
Smith, Oak Shade Oil Co No 2 3
" " No 3 4
Widow Mahl, Alwater & Co 8
" D O White & Co 6

Wells completed 14
Production 125
Dry 3

Butler and Armstrong.

Titley, Titley & Bros No 9 5
" " No 10 30
Miller, Dennison & Fleegler No 8 75
Glenn, W P Turner & Co No 4 40
Frederick, J C Geisford & Co No 2 50
Duffey, McBride & Campbell No 4 5
Glenn, C A Hite No 1 10
McCue, Father Quilter & Co .... dry
McCrea, Hunter & Cummings No 4 20
Murtland, Troutman Oil Co No 3 30
" " No 4 40
Barnhart, Reep & Sutton No 5 75
" " No 6 150
" " No 7 150
David Shakeley, Bruce, McCormack & Co. dry
Jenny Boyle, Showalter Bros & Hartman No 3 50

John Boyle, J Hartman & Co est..... 5
Dulity, Greenlee No 5..... 30
" " No 6..... 20
Piersol, Phillips Bros No 4..... 5
Rader, McJunkin & Co..... 10
Reibold, Painter Bros est..... 12
Church lot, Westerman & Co.....dry
Burford, Burford Oil Co No 4 est..... 20
McMillan, Craig, Cappeau & Co..... ...gas
F Miller, Seibert Bros No 6..... 40
Barnhart, Vensel, Larken & Co No 2..... 30
Adderhart, Christie Bros.....dry

St. Joe.

Neff, Phillips Bros No 5 .....dry
Witt, Mulligan & Co..... 3

Martinsburg.

Turner, W J McKee..... 40

Thorn Creek.

Chas Morrison, Clark & McKinney No 3.. 50
Maharg, Shetter, McKelvey & Co No 2.. 20
Miller, " .....dry
Bulford, Sam Armstrong..... 2
Maharg, Bolard & Smith No 2..... 30
Morrison heirs, Thorn Oil Co No 11..... 12

Wells completed..... 37
Production.....1059
Dry..... 7

Shoustown, Etc.

Chas Eachel, Raccoon Oil Co No 4 50
A P Morrow, Raccoon Oil Co No 2..... 50
" Raccoon Oil Co & Solar Oil Co No 6 est..... 200
" " No 7 est..... 750
" " No 10.....1200
Robert McCartney, Raccoon Oil Co No 2 50
Gilmore, Philadelphia Co No 4..... 50
Thompson, P M Shannon No 3 est..... 100
" " No 4..... 200
" " No 5..... 150
Gilmore, Galey No 1..... 45

Georgetown, Greene County, Etc.

Georgetown, Semple & Co..... 8

Wells completed 12
Production.....2853
Dry..... 0

Washington.

Gordon, P L & H Co No 5..... 50
Hess, " No 3..... 30
" " No 4..... 50
Barre, Forest Oil Co No 5 est.....1200
Mary Miller, Reed & Co No 1..... 950
Wm Davis, Union Oil Co No 1..... 700
Taylor, Union Oil Co No 2..... 75
Clark, Thayer Oil Co No 4..... 120
" " No 5..... 75
Cameron, Willets, Young & Chartiers Oil Co No 5..... 650
" " No 6..... 100
Munce heirs, Willets & Son No 8..... 250
" " No 9.....1400
" " No 10.....1250
" " No 11..... 10
Lizzie McGahey, Mascot Oil Co..... 250
W J Munce, John McKeown No 5..... 200
" " No 1..... 350
Malloy, Ten-Mile Oil Co..... gas
Forest lot, Chartiers Oil Co..... dry

Wells completed..... 20
Production 7710
Dry..... 2

DRILLING WELLS.

RIGS UP AND BUILDING SEPTEMBER 30, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
3,	Coyle & Simon (old).....	rig
12,	Allen & Morse (old).....	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old).....	rig

New rigs..... 0
Old rigs..... 4
Drilling..... 0

Total..... 4

Alma.

3, M J McMullan & Co No 5 (old).. rig
23, Vance & Horton (old)..... rig
26, Willetts & Elliott (old) ..... rig
51, Sawyer & Co (old)..... rig
81, Shirley & Hochstetter No 6..... rig
86, Brown & Thornton No 5 ..... drilling
120, McCalmont Oil Co No 10 (old)... rig
142, Dean & Smith No 5 (old)..... rig

New rigs 1
Old rigs..... 6
Drilling 1

Total 10

Wirt.

1, (Riley Allen) Emp Gas & Fuel Co No 2..... drilling
47, (Voorhees) Applebee & Mix No 2 (old)..... rig
48, (Church) McNorton, Deming & Co No 2 (old)..... rig
52, (Jacob Jordan) Wilson & Johnston No 9 (old)..... rig
55, (Orson Witter) P M Shannon & Co No 1 (old)..... rig
55, (J W Jordan) P M Shannon & Co No 1.... drilling
60, (Alvah Jordan) J H Snow No 6 (old)..... rig
60, (A Jordan) Lester, Jordan & Co No 3..... rig
60, (Lawrence) Empire Gas Co (for gas).... drilling
60, (M Jordan) Surprise Oil Co No 2 rig bldg
61, (Deyoe) National Tran Co No 77 (for gas).... drilling
61, (Goodell) C Phillips No 3..... drilling
61, (I Jordan) Ackerly, Barton & Co (old)..... rig
61, (Isaiah Jordan) Lester, Jordan & Co No 6 (old)..... rig
61, " " No 7 (old)..... rig
62, (Peterson) Limekiln Club No 4 (old)..... rig
62, " Barton, Hammond & O'Neil No 6. drilling

New rigs..... 3
Old rigs and shut down 9
Drilling 5

Total 17

Bolivar.

12, Wood & Co (old)..... rig
15, Kelly & McMurray..... drilling
23, F C Streeter & Co No 12 (old)... rig
30, Fritz & Lowry No 8 (old)..... rig
30, " No 10 (old)..... rig
64, McDougal Oil Co..... sand

New rigs..... 0
Old rigs..... 4
Drilling 2

Total 6

Genesee.

11, (Little Genesee) Emp Gas & Fuel Co Limited (for gas)..... drilling
14, Merwin (old) ..... rig
22, I Willetts No 14 (old)..... rig
22, " No 15 (old)..... rig
22, " No 16 (old)..... rig
22, " No 17 (old)..... rig
22, " No 18 (old)..... rig
23, Coughlin (old)..... rig
29, William Cranston (old)..... rig

New rigs..... 0
Old rigs..... 8
Drilling 1

Total..... 9

Clarksville.

3, (M Jordan) M Jordan No 2..... drilling
5, (Lane) Lane Oil Co No 5 (old).. rig
5, (Bradford) Barton, Ackerly & Co No 20.... drilling
5, (Lane) Barton, Ackerly & Co No 21.... drilling
6, (Seever) Ackerly, Barton & Co No 9 (old)..... rig
6, (Hamilton) Ackerly, Barton & Co No 23.... rig bldg
20, (Ernhout) " (old)..... 2 rigs
5, (Wetherby) Harris, Johnson & Co No 10 (old)..... rig
9, Heuston & Brecht No 4 (old)..... rig
9, Merritt (old)..... rig
13, (Wixon) Wixon Oil Co No 3 ... drilling
3, (A Jordan) Angell Oil Co No 3. drilling
10, (Swartwout) " (old).. rig
11, (Keller) " No 3..... drilling

New rigs..... 1
Old rigs..... 8
Drilling 6

Total.. 15

Miscellaneous.

Birdsall twp, I Willets & Co..... drilling

New rigs..... 0
Old rigs..... 0
Drilling 1

Total 1

Bradford Field.

East and West Branches.

Cary, W H Duncan No 4 (old)..... rig
Dent, Whitney & Wheeler No 47.... drilling
Dent, P C L & P Co No 71..... drilling
" " No 72..... rig
B O Co, Western Oil Co No 7 (fishing) sand
Mack, Columbia Oil Co (old)..... rig
" Fisher Oil Co No 19 (old)..... rig
Hatfield, Wesley Chambers No 3... drilling
King, Carmen & Co No 2 (old)..... rig
" Smith Chemical Co (for gas). drilling
Brown, Wood & Young No 7..... sand
" " No 8..... drilling
Wagner, W C Patterson & Co No 9. drilling
Paton, McClure & Co (old)..... rig
Hinchey, McMurray Bros No 6 (old) rig
Clark, McCray Bros (old)..... rig

Quintuple.

25, O H Strong (old)..... rig
44, J W Humphrey (old)..... rig
260, E T Howes (old)..... rig

New rigs..... 1
Old rigs and shut down.....11
Drilling..... 7

Total.....19

Kendall Creek.

Melvin, P C L & P Co No 92..... drilling

New rigs..... 0
Old rigs..... 0
Drilling..... 1

Total 1

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) rig
Borden, T P Thompson (old)..... 3 rigs
Duke, J West No 7 (old)..... rig
" " No 8 (old)..... rig
Keating, Forest Oil Co No 54 (old).. rig
Ellis, Dr Chrisman..... ..... drilling

New rigs..... 0
Old rigs..... 7
Drilling 1

Total 8

Foster Brook.

E T Co, Kervin & Co No 10 (old).... rig
" E T Co No 41..... 350
" " No 42 (old)..... rig
C B & H, Juter & Yager (old)..... rig
" Clark, Cooper & Co No 9 (old)..... rig
" Burns & Monroe (old)..... rig
" Watson Oil Co No 48..... rig

New rigs..... 1
Old rigs..... 5
Drilling..... 1

Total 7

Four Mile.

Van Campen, Coldren & Vance (old) rig
" Jas K Van Campen No 3 (old)..... rig
Dye, Manhattan Oil Co No 5 (old)... rig

New rigs..... 0
Old rigs..... 3
Drilling..... 0

Total..... 3

Indian Creek.

North Branch, J D Downing & Co (old) 2 rigs
Hamlin, Miller & O'Dell No 4 (old).. rig
" Forest Oil Co No 40 (old)... rig
" " No 41 (old)... rig
Weston, J L McKinney & Co No 3.. drilling
" Murphy, Hogan & Williams No 12... drilling
Shattuck, Bussell & Johnson No 7.. drilling
" " No 8.. drilling
" " No 9.. rig
" " No 10.. rig
Gale, Moore & Watson No 7..... rig
Dodge, T Jennings No 1..... drilling
" " No 2..... rig

New rigs..... 4
Old rigs..... 5
Drilling..... 5

Total.....14

Cole Creek.

Warrant 2263, Union Oil Co No 6(old) rig
" 2263, " No 7(old) rig
Bingham, lot 269, Bennett & Thompson No 11 (old) rig
" lot 477, Tucker & Rolfe No 3 (old) rig
" lot 517, Rose & McLeod No 2 50

New rigs 0
Old rigs 4
Drilling 1
Total 5

Kinzua.

Warrant 2243, Emery Oil Co No 51 200
" 3076, Union Oil Co No 67 1000
136, George Tait drilling

New rigs 0
Old rigs 0
Drilling 3
Total 3

Miscellaneous.

Ceres, (Steinrod) Ceres Gas Co (for gas) drilling

New rigs 0
Old rigs 0
Drilling 1
Total 1

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Morrison, Anchor Oil Co No 12 rig hldg
Weed, Morse & Collins No 6 drilling
Willie Run, Smith, Bright & Co No 2 sand
Richardson, T G Phillips drilling
Morrison Run, Dr Van Scoy drilling

Warren, Etc.

Willie, Beatty & Pickett drilling
Kersberger, Brown Bros No 2 rig
Clark, James Clark rig
North Warren, Sandford & Jamieson No 7 rig bldg

New rigs 4
Old rigs 0
Drilling 5
Total 9

Clarendon.

35, A J Thompson rig
35, Henderson & Murphy No 7 100
55, O W Beatty & Bro No 51 drilling
55, " No 52 rig hldg
104, O'Donnell, Hill & Co 500
105, R I Shugert (old) rig
105, Tucker & Co No 2 drilling
105, Hackett & Shirley No 6 drilling
107, W B Roberts & Son No 20 (old) rig
463, Fred Hue No 2 (old) rig
531, S Short & Son No 10 sand
531, " No 11 rig
531, Keegan, Sage & Co No 7 rig
558, Goal Bros No 1 rig
556, J A Waterhouse & Co No 16 100

New rigs 6
Old rigs 2
Drilling 7
Total 15

Tiona.

83, Fertig, McKinney & Co drilling
83, " (old) rig
161, Ed O'Donnell rig
—, E O Emerson rig
200, Bovee & Duck No 10 (old) rig
240, W W Winger No 5 (old) rig
240, H B Beatty & Co No 20 sand
244, Horton, Crary & Co No 13 (old) rig
244, " No 20 (old) rig
244, " No 21 (old) rig
244, " No 22 (old) rig
281, (Ford) L Kraeer & Co No 10 drilling
284, Hackett & Shirley No 7 drilling
321, Pickett & Stone No 7 200

New rigs 3
Old rigs 7
Drilling 4
Total 14

Cooper District.

407, Shank & Stewart No 9 (old) rig
407 " No 13 (old) rig
407, Bradford parties drilling
3198, Haight, Agnew & Co No 6 drilling

New rigs 0
Old rigs 2
Drilling 2
Total 4

Balltown.

3194. Porcupine Oil Co No 39 (old) rig
3195, (Crisman) N F Clark No 14(old) rig
Forest, Wheeler & Dusenbury rig
—, James Welsh rig

New rigs 2
Old rigs 2
Drilling 0
Total 4

Kane.

341, Forlorn Hope Oil Co 1100
344, Treat & Mallory No 1 sand
344, " No 2 1500
345, Clinton & Swayne No 2 (fishing) 1900
380, Boyer, Caldwell & Co No 10 (fishing) sand
380, " No 11 (fishing) 800
380, " No 12 drilling
380, Boston Oil Co No 3 300
380, " No 4 rig
380, " No 5 1800
380, " No 6 rig
381, " No 13 (fishing) sand
381, " No 14 1800
381, " No 15 300
381, " No 16 rig
381, " No 17 200
381, " No 20 1000
381, " No 21 1000
381, " No 22 1000
382, Rathbone & Mallory No 5 drilling
382, " No 6 drilling
382, " No 7 drilling
383, " No 1 drilling
383, " No 2 2000
384, (Donaldson) Shirley, H & Co No 10 1600
384, " " No 11 1600
384, " " No 12 800
384, " " No 13 200
385, P T Kennedy No 4 drilling
421, (Mallory) S H & Co No 14 sand
421, (King) " No 8 800
3767, Craig & Cappeau No 28 1700
3767, " No 35 sand
3767, " No 39 300
3767, " No 40 rig
3767, Ass Producers & Craig & Cappeau No 13 rig
3775, Andrews No 6 sand
3775, Thos Griffiths No 10 sand

New rigs 5
Old rigs 0
Drilling 33
Total 38

Grand Valley.

Hunter, L B Wood & Co No 12 rig
Gibbs, " No 3 (shut down) sand
Sam Fisher, " No 4 drilling
J W Fisher, " No 2 drilling
Merritt, Miller & Crippens No 15 sand
" " No 16 rig
Blakeslee, " No 8 rig
" " No 9 rig
Peterson, " No 6 sand
" " No 7 rig
Lot 186, W B Benedict & Co No 9 sand
" 186, " No 10 rig
" 186, Fertig & Henne No 9 sand
" 186, (Camphell) Holman & Hopkins No 8 100
" 197, (Blakeslee) Tew Bros & Co No 7 rig
" 197, " " No 8 rig
Nason, Emery & Boyer No 10 sand
" " No 11 rig
Lot 196, Bovee & Duck No 9 (fish'g). sand
" 196, " No 10 rig
" 195, (Emerson) W W Hague No 7 drilling
Carpenter, W J Jackson & Co No 5. drilling
" " No 6. rig
Lot 150, Fertig & Lord No 3 drilling
" 150, " No 4 rig
" 185, (Brenn) John Brenn No 4 rig
" 149, (O Pet Co) G P Kepler No 16 rig
" 197, Bell & Hazeltine No 8 drilling
" 151, Cadwallader & Co drilling
" 150-185, John J Carter No 11 drilling
" 150-185, " No 12 drilling
" 150-185, " No 16 rig
" 235, Crippens & Phillips No 3 sand
" 151, (Leckey) Southwest Oil Co No 6 rig
Putnam, Wayne Oil Co drilling
Lot 238, J B Jennings & Grandin rig
" 345, (Van Gilder) Boyle drilling

New rigs 17
Old rigs 0
Drilling 20
Total 37

Miscellaneous.

3663, S B Hughes & Co No 2 drilling
3664, Clark & Foster 1500
3673, M J Feeley & Co No 2 drilling
2032, Armstrong & Co 1500
3779, Sill & O'Dell drilling
Wilcox, Nickel drilling
3671, Markham & Co rig
5134, Roth & Cornwall drilling
Jefferson Co, Brookville Gas Co drilling
Forest Co, 2824, Alshouse drilling
2695, National Transit Co No 17 drilling
2695, " No 20 rig
2676, " No 22 drilling
2675, " No 23 rig
2723, " No 24 rig
2723, " No 25 drilling
2676, " No 26 drilling
Sutton Hill, A F Fritts rig
Dunn's Eddy, Parker & Nelson drilling
Youngsville, (McKinney) W Ford & Co 100
Tionesta Creek, P Berry & Co rig

New rigs 6
Old rigs 0
Drilling 15
Total 21

Lower Country.

Venango and Other Sections.

Sage Run, Beers & Son No 3 (old) rig
Hogue, Oil City Fuel Supply Co No 2 sand
Benninghoff, " No 6 drilling
Morrison, " No 1 drilling
McBride, Thomas Smith (old) rig
Kaufman, A P Dale No 9 (old) rig
" Judd & Geiser (old) rig
Osmer, Galbraith & Parker (old) rig
Opposite Reno, Fry drilling
Slab Furnace, S P McCalmont (old) rig
Caldwell, (Oleopolis) Sargent (shut down) sand
Baltimore lands, (Olcopolis) Sargent drilling
Mt Hope, Dr Galbraith rig
Steele, John Waits drilling
Curtis, Thomas Smith No 3 rig hldg
Blood, P Bankson rig bldg
Robinson, Jas Robinson rig bldg
Hill, Kirkwood & Co drilling
John McClintock, John Harsh 100
Diamond, Darr & Craig No 12 rig hldg
Kerr Hill, Wilson Bros drilling
Raymilton, Wm Raymond drilling

Tipperary.

Moore, Beers & Co No 3 sand
" " No 5 rig
" E & B F McCracken No 4 drilling
" " No 5 rig
" " No 6 rig
A Moore, A P Dale No 2 rig
" I S Gibson & Co No 2 rig
J Fox, Wesley Chambers No 2 drilling
M Fox, Judd & Kaufman drilling
Bickel, Riddle & Lynch drilling
J Stanley, Dibble & Co drilling
Siggins, Taylor, Torrey & Murphy No 3 100
" " No 4 rig

Tarkill.

Webb, Taylor, Torrey & Murphy No 17 (shut down) 300
Geo Hill, " No 15 sand
W H Hill, " No 5 sand
" " No 6 100
" " No 7 rig
Benton, Benton Oil Co No 9 500
" " No 13 600
" " No 14 100
Houser, I H Webb & Co No 3 sand
" " No 4 drilling
" " No 5 rig
Houser, A P Dale & Co No 4 sand
Kahle, Kahle Bros No 5 drilling
Benninger, Burke & Hurley drilling
" Benninger & Myers No 2 drilling
" Venango Gas Co 600
Dolan, S P McCalmont No 2 drilling
Lloyd lands, Barnum & Co drilling

Rockland or Red Valley.

Hetzler, Leckey & Foster No 6 rig
Batten, Dale Bros drilling
Hetzler, Morgan & Co rig
Hetzler, Hite & Co (Ritts) drilling
Grant & Shcasley, W H H Piper drilling

Bullion.

Simcox, McElree & Co drilling

Vicinity Emlenton.

D Russell, Baum & Co (old) rig
W P Grant, J V Ritts (old) rig

D
eibelheis, Morgan & Mull..... drilling

New rigs.....15
Old rigs.....10
Drilling.....37
—
Total.....62

Clarion.

Ber in, Berlin & Sons No 14 (old)... rig
" " No 15 (old)... rig
John Henel, Koch Oil Co No 8 (old) rig
Lloyd, Dr Metzger (old)..... rig
Buzzy, McDowell & Crawford No 3 rig
Amos Strutman, Pagett & Co..... sand
Jacob Black, Berlin & Sons..... 900
Shreffler, McCallom & Co (old)..... rig
Edwards, Urquhart & Lavens No 7. 300
Wm Mong, Whitehill, Chambers & Co No 5.... 300
Leslie, Buzzard & Co..... rig
Sheffler, Kerr & Co..... drilling
Exley, Zellers & Co..... drilling
Wagner & Curl, J V Ritts (old).... rig
Heasley, Heasley & Co (old)..... rig
Brown, J V Ritts (old)..... rig
Mahl, Atwater & Co..... rig bldg
" D O White & Co..... rig
Booth, Giles Bros..... sand
Kiser, Kiser & Co..... rig
Mahl, Howe & Maxwell..... 300
Call, Irwin & Co..... 100
Alum Rock, Smith Bros (for gas)... drilling
Cherry Run, Beson & Co (for gas).. rig bldg
Corsica, John Deitrich & Young.... 300
Mechanicsville, Clarion Gas Co (for gas).... drilling
Deadman's Hollow, Brookville Gas Co (for gas).... drilling
McDowell, McKinney Bros..... drilling
Egypt, Henry Ager..... drilling
Vowinkle, DuBois Oil Co..... 1100
Wagner & Curl, Wagner & Hahn (old).... rig
Freedom, (Hogue farm) Forsythe.. rig

New rigs..... 6
Old rigs..... 10
Wells drilling..... 13
—
Total..... 29

Butler and Armstrong.

Black, Ross, Reynolds & Co (old)... rig
Dulity, Ireland & Hughes No 8..... 500
Miller, Dennison & Fleegler No 7.. 900
" " " No 9.. 300
F Miller, W G Crawford & Co (old).. rig
Glenn, W P Turner No 5..... 1000
Hickey, Boyd & Co No 2..... 1300
" " No 3..... 1000
Eminger, Boyd & Semple No 2 (old) r g
Jos Herturck, Seibert Bros..... drilling
Murtland, Troutman Oil Co No 5... 700
Brownfield, Richard Jennings (old). rig bldg
Jenny Boyle, Showalter Bros & Hartman No 4.... rig bldg
Barnhart, Vensel, Larkin & Co No 3 1300
'Squire Reatt, Hunter & Cummings (old).... rig
Geo Rogers, W S Guffy & Co No 1.. 800
Wm Hickey, Fisher Oil Co..... drilling
Chas Duffey, Forquer Bros..... 500
" Branch Creek Oil Co. 500
" McBride & Campbell. rig
Houghton, Phil Brady & Co..... rig
Chas Duffey, Hoch & Co (old)..... rig
F Miller, Seibert Bros No 7..... drilling
Glenn, C A Hite & Co No 3..... rig bldg
Gillespie, Big Venture Oil Co..... sand
S H Critchlow, Phillips Bros No 2.. sand
Slater, Phillips Bros No 1..... sand
" " No 2..... sand
Railroad lot, Wm Semple Jr & Co No 2 (fishing).... 1250
Galesbaugh, Leidecker & Co..... sand
John Dickey, Phillips Bros..... rig
Dickey heirs, Fisher Oil Co..... 300
" Leckwood, Tabor & Co drilling
S H Critchlow, McJunkin & Co..... 1400
Markle, Lentz & Co..... sand
Mars, (Marshall) Clark, Hoag & Co. 700
" Belford, R W Miller..... rig bldg
Callery, (Widow Croft) Breakneck Oil Co.... rig
Schaffner, Butler Gas Co..... drilling
McQuistion, Shenango Gas Co..... drilling
Butler, Sam Boyd..... rig

St. Joe.

Nohar, Christie & Co..... 500

Martinsburg, Etc.

Edmunds, Edmunds & Co..... 200
H & H Tract, Conley Oil Co(fishing) 200
Harrison, W H Harrison..... rig
Arch Kelley, Turner & Co..... rig bldg
J S Cooper, ——..... drilling

Thorn Creek.

Chas Morrison, Clark & McKinney No 4.... 1300
Maharg, Shetter, McKelvey & Co No 3 (old).... rig
Bulford, Iman, McBride & Campbell (fishing) 1450
Burton, Farmers Oil Co No 2..... 1000
Maharg, Bolard & Smith No 3..... 400
John Klinger, Imau, Waldron & Co 1500
McLaughlin, Thorn Oil Co No 12... sand
Burton, Iman, McBride & Campbell 300
" Thayer & Crosby..... 800
" " ..... rig
Kersting, McClung & Co..... 600

New rigs.....12
Old rigs..... 7
Drilling.....40
—
Total.....59

Shoustown, Etc.

Thos Pinkerton, J S McKelvy (old) rig
Charles Eachel, Raccoon Oil Co No 2 (old). rig
" " No 5 (old). rig
" " No 6 (old). rig
A P Morrow, Raccoon Oil Co & Solar Oil Co No 1. rig
" " No 2. 900
" " No 3 rig bldg
" " No 4. 800
" " No 5. rig bldg
" " No 8. 900
" " No 9. drilling
" " No 11 1300
" " No 12 800
" " No 13 rig
McCartney, Raccoon Oil Co No 3... 500
" " No 4... rig bldg
Hood, Raccoon Oil Co No 4 (old).... rig
Stevenson, " No 2..... rig bldg
Marks, " No 2..... 300
Jos Alexander Raccoon Oil Co No 2 100
" " No 3 rig bldg
Wallace, " No 2 rig
" " No 3 rig bldg
McAllister, " No 1 1500
Stone, McFarland & Co No 2..... 300
Thompson, P M Shannon No 2 (old) rig
" " No 6..... 400
" " No 7..... 100
" " No 8..... rig
Eachel, Chas Eachel..... drilling
Alexander, Lovell & Rumsey..... rig
Johnson, Brown & Chartiers Oil Co No 1.... 600
Vesey, Chartiers Oil Co..... rig
Twyford, Galey..... 1250
Harper, Frederick & Calhoun..... 300
Davis, Asa Say..... rig bldg
Economy, Economites..... rig
Smith, J M Guffy & Co..... drilling
Scott, J Sharp, McDonell & Co..... drilling
McCoy, Jas McCoy & Co..... drilling
Davis & Duff, Union Oil Co..... rig
Good, uffy & Co..... drilling
J D Byers, Tomlinson & Co..... drilling
Riddle, Philadelphia Co..... drilling
McGee, Vandergrift & Co..... drilling
W E Edmonson, Philadelphia Co (old).... rig
Aiken, Philadelphia Co..... rig

Georgetown, Greene County, Etc.

Trimble, Fishel, Connors & Boyd (old).... rig
Fordyce, E M Hukill & Co No 1 (shut down). 1300
Gregg, E M Hukill & Co No 1 (fishing).... 2275
Girard, E M Hukill & Co No 1 (shut down). 739
Girard, E M Hukill & Co No 2 (shut down). 1060
Hathaway, E M Hukill & Co No 1 (shut down).... 1060
Mt. Morris, E M Hukill & Co (fishing).... 1000
Longanecker, " (old).... rig
Farmington, W Va, " ..... drilling
Greene county, (Phillips farm) I Willets.... 1000
" (Ninevah) Johnston & Hamilton.... drilling
Marshall Co, (W Va) Wheeling Natural Gas Co.... drilling
" " Rocklick twp, Wheeling Natural Gas Co.... drilling
Burton, (Wetzel Co) Philadelphia Oil Co.... rig

New rigs.....17
Old rigs and shut down.....15
Drilling.....29
—
Total.....61

Washington.

Weaver, Citizens' Oil & Gas Co..... sand
I Wilson, Forest Oil Co (old)..... rig
Johnson, " (old)..... rig
Barre, " No 4..... 2400
" " No 6..... 2250
" " No 7..... rig bldg
Barre, Forest Oil Co, No 8..... rig
" " No 9..... 100
" " No 10..... 100
" " No 11..... rig bldg
Hall, " No 3..... sand
" " No 4..... sand
Morgan, Union Oil Co No 2..... 1600
" " No 3..... 1600
" " No 4..... 1400
" " No 5..... 1400
" " No 6..... 800
Wm Davis, " No 3..... 1000
" " No 4..... 500
Taylor, Union Oil Co No 5..... 1500
" " No 6..... 1200
" " No 7..... rig bldg
Dye, " No 1..... 1900
Wylie, A P Co No 2..... sand
" " No 3..... 2425
Linn, Coast, Sons & Co No 1..... 1500
" " No 3..... 1675
" " No 4..... 1700
Clark, Thayer Oil Co No 6..... rig
Smith, Willets, Young & Chartiers Oil Co No 2.... 2130
" " No 4.... 2370
" " No 5.... 1600
" " No 6.... 1700
" " No 7.... rig
Cameron, " No 3.... rig
" " No 4.... 2250
" " No 7 fishg sand
" " No 8.... 100
Baker's Station, Dyer & Roberts fisg 750
Munce Heirs, Willets & Son No 11.. sand
" " No 12.. sand
" " No 13.. 1400
" " No 14.. 700
" " No 15.. 375
" " No 16.. 500
" " No 17.. 700
" " No 18.. rig
" " No 19.. 100
" " No 20.. 50
" " No 21.. rig
" " No 22.. rig bldg
" " No 23.. rig bldg
McDonough, I Willets & Co..... 1500
Barre, Pew & Emerson (old)..... rig
J Munce, " 800
Andrews, Wilson, Brenneman & Weaver.... 1600
Parseill, Fisher Oil Co..... 1125
Wade, B B Campbell & Co No 1 (fishing).... 2000
" " No 2.... 800
Lizzie McGahey, Mascot Oil Co No 2 300
T McGahey, " No 3 500
" " No 4 180
W J Munce, John McKeown No 7... 2000
" " No 8... 300
Martin, John McKeown No 1..... 2405
" " No 2..... 2100
Quail, " No 1... 700
" " No 2... 400
" " No 3... 400
" " No 4... rig
Coal Center, Hornbake..... drilling
Shrontz, Nail City Oil Co..... 2350
Price, Crocker & Co..... 2200
Wolf, Craig & Co (old)..... rig
Fergus, " No 1..... 2000
Fair Grounds, Wheeling Oil Co No 2 1350
" " No 3 rig
Martin, Central Oil Co No 1..... 2350
" " No 2..... 1000
Wolf, Robbins & Co (old)..... rig
Martin, Allen, Dyer & Co..... 300
Linn, Manufacturers' Natural Gas Co 100
Wright, Chartiers Oil Co & F W Andrews No 1.... 425
" " No 2.... 325
" " No 3.... 500
McNary, Allen & Co..... rig
Pease, Marshall Oil Co..... 350
Wm Thome, Associated Producers No 1.... 100
" " No 2.... rig
" " No 3.... rig
" " No 6.... rig bldg
John Murdock, Millers Oil Co (old) rig
John on lot, Colton & Co (shut down) 650
Boyce Station, Philadelphia Co..... drilling
Wylie, Munhall & Co No 3..... 1500
Hart lot, McKeever & Co..... 2450
Donaldson, Robbins & Co..... 2000
Van Kirk, Caldwell & Co..... 1200
McKean " 300
McCracken, Reed & Co (old)..... rig
Leyda, F J Clemenger & Co (old).. rig
Hoffman, Barnes (old)..... rig bldg
Montgomery, McKinney & Co & Robbins No 3.... 500
Watson, Butler & Co..... 150
Cannonsburg, Manufacturers' Natural Gas Co.... 1600
" " 1400
Bridgemill, Allegheny Co, Robbins & Co.... drilling

New rigs.....17
Old rigs.....10
Drilling.....80
—
Total.....107

PETROLEUM PRODUCTS.

THE MARKET FOR LUBRICATING AND MISCELLANEOUS OILS AND REFINERS' SUPPLIES, OCTOBER 15, 1886.

[Reported expressly for THE PETROLEUM AGE.]

REVIEW OF THE NEW YORK MARKET.

The month under review has developed considerable increase in the volume of business in nearly all lines, and we now rarely hear complaints of dullness. Both in the number of orders coming in and in their extent has the improvement been marked, and if we now have such a thing as a distinctive fall trade we are now in its full tide. The satisfactory condition of the state of trade has not, however, been accompanied by an equally satisfactory improvement in prices, although it had been believed that with an increase in the outlet for goods the abnormally low values prevailing for so long a time would also show corresponding change for the better. There are few articles which have advanced in price and a few have even sold at lower figures than before, and some lower than was beleived possible they would go, even though there had been no increase in the demand. Particularly is this the case with some of the animal and fish oils, while the petroleum lubricants are in as unsatisfactory condition, so far as regards prices realized, as when we wrote a month ago. When to look for a change for the better in this respect is a problem not easily solved, and we do not hazard a prediction, but, like the dealers and manufacturers, hope for the best.

ANIMAL AND FISH OILS.

Cod.—Notwithstanding the fact that the supplies have been pretty well concentrated and the prices prevailing during the summer months were extraordinarily low, the past month has witnessed a break that was entirely unlooked for, and which, had it been predicted but two months ago, would have been set down as the vagaries of a crank, fit companion to the weather prognosticator Wiggins. The fact, however, is that the supply is considerably in excess of the demand, and under such conditions prices are pretty apt to go to a point equal to the cost of production or even lower. Sales of fair quality crude have been made "down east" at 25c, and 28c has been accepted for other parcels of good quality. The general asking price, however, is 30c, and from store here that figure is insisted upon. The movement in the aggregate has been quite large, but the supply is still larger than holders care to carry, and an increase in prices is therefore not looked for until stocks are considerably reduced. It is believed that a considerable proportion of present stocks could be disposed of to exporters at 25c, and it might prove a good move to place the surplus in that way. Most holders, however, claim that figure means a loss to them and they refuse to sell under 28c. For tanked there has been a steady call at 30@33c, the bulk of the business done being at the latter figure. Newfoundland is quoted at 37½@40c, and the latter figure has been accepted for jobbing parcels.

Elaine.—There has been very little change in the condition of the market for this oil, both as regards the prices quoted and the amount of business doing. While the quotations are steady at 38@40c there have been more sales at 40c, and those at 38c have been the exceptional ones, while offers of figures under have been uniformly rejected. The demand has shown some increase but the supply has kept pace and there has at no time been any difficnlty in filling orders.

Lard.—Soon after the date of our last review the market for city pressed eased off, doubtless owing to the comparatively low price at which western was then offered in this market. The incoming of the present month saw a decline of fully 2c, and since then the market has dropped to 52½@53c for city, while western has sold as low as 50c. During the past few days, however, there have been indications of a reaction and should the strike in the packing houses at Chicago continue an advance would naturally follow. The lower grades have not suffered the same degree of reduction in price, but have also not shown the same increase in demand. We quote extra No. 1 at 45@46c, No. 1 at 43 @44c, and No. 2 at 40c.

Menhaden.—Now that the fishing season is drawing to a close the manufacturers naturally look for some improvement in values, but thus far they have been disappointed. The sales of crude have been quite large, but the stock is still in excess of probable requirements, and unless a considerable proportion can be marketed for export we can see no reason to expect an important advance. Early in the month under review a lot of Chesapeake Bay oil was sold, delivered in Boston, at 18c. This is the lowest price yet named. Other sales were made at 19c. Northern oil has been sold at 20@21c, and 21c is now about the lowest figure that would be accepted for good merchantable, while 22c is quoted for prime. In all some 3500 barrels have been disposed of, 1500 barrels being taken by one house in this city. The fishing has been fair, though not so good as at this time last year, and the condition of the fish have been satisfactory, the yield being variously reported from six to eight gallons of oil per 1000 fish. Some of the factories have already ceased operations for the season and others will close on the first of November. Some, it is said, will be permanently closed as the business the past two seasons has proved unprofitable. The demand for pressed and bleached has shown a marked increase the past few weeks and prices show very little change. We quote 24 @25c for dark pressed, 25@26c for light pressed, 28@ 29c for bleached winter, and 32c for extra bleached winter.

Saponified.—The demand for this oil has not shown the improvement that has been extended to other oils, doubtless owing to the very low prices ruling for competing oils and greases. The quotations have not been materially altered since our last writing, but 38c has been accepted and that figure would no doubt be entertained at the present time. For small lots of five to ten barrels 40c is quoted and generally obtained.

Sperm.—The market for crude at New Bedford has remained steady at 75c, notwithstanding that the sales have been light and the stock is now larger than it was a month ago, being now something over 21,000 barrels. There has been no demand for export and it is doubtful if any considerable quantity could be placed for shipment abroad above 72c, that being the best bid made. For refined the demand has shown considerable increase and consequently holders of crude look to manufacturers for an outlet. We quote natural spring at 75@76c, bleached spring at 80c, natural winter at 80c, and bleached winter at 85c. The demand for the latter grade has shown the most marked improvement.

Whale.—The sales of crude have not been large, both manufacturers and exporters holding aloof. Holders have modified their views somewhat and now offer southern at 32c and Arctic at 34c, though a good order, especially for export, could doubtless be placed at 1c under these figures. The stock at New Bedford is something over 11,500 barrels, and holders appear anxious to prevent further accumulation. they having thus

far been disappointed in the movement. For refined a gratifying increase in the demand is reported, and it is expected that manufacturers will soon be obliged to replenish their supplies of crude. We quote natural winter at 38@39c, bleached winter at 40@41c, extra bleached southern at 42@43c, and extra bleached northern at 44c.

[NOTE.—The remainder of the market for mineral oils. lard, tallow, refiners' supplies, etc., failed to arrive in time for insertion in this number.—ED.]

An Incandescent Light from Natural Gas.

The problem of obtaining the greatest possible illuminating power, from natural and manufactured gas, has engaged the attention of many inventors, and numerous contrivances with this end in view are now before the public. Several companies have been formed at Pittsburgh for the purpose of furnishing a light of good illuminating power from the natural gas, with which the great manufacturing city is so liberally supplied. With few exceptions, the attention of the investigators in this line has been turned to enriching the subtle fluid after it has been delivered from the wells.

Dr. G. E. Benninghoff, the inventor of the oxygenized gas process for smelting iron, steel and glass, has recently perfected an apparatus that uses any kind of gas, and without any enriching process whatever, produces a flame that can be compared only with the electric light in brilliancy and intensity of illuminating effect. This invention is exceedingly simple, easily introduced wherever there is a gas supply and may be safely stated to produce the greatest effect with the least possible amount of material, of anything of the kind that has ever been constructed.

A visit to the Kendall Machine Shops, where the Doctor has been busily engaged in his experiments, will convince the most skeptical that the above claims are not at all over stated.

An ordinary suction blower receives the gas through an opening scarcely one-sixteenth of an inch in diameter. A two-inch pipe admits the air. The gas and air are mingled together in the proportion of probably one part gas to one hundred or more parts of common air, and sent forward through a two-inch pipe, which is soon reduced to one inch, and carried around a large circuit and back to the blower. At different points vertical pipes with the Benninghoff burner are attached. This is a simple rounded bulb constructed of platinum gauze, inside of which the mingled gas and air is ignited and a beautiful soft white flame of intense illuminating power is the result.

The doctor applies the same principle for heating purposes, and the American Gas Light and Heat Company of Philadelphia, which controls a valuable process for the manufacture of gas from petroleum, has taken hold of the invention and will soon be in readiness to supply the inhabitants of the Quaker City with gas for illuminating and heating purposes at a price which will bring this luxury within the reach of slender purses. The most striking feature of the mixed gas and air is its entire freedom from explosion. The proportion of air to gas is so large that when the mixture is allowed to escape freely it is almost impossible to ignite it. This valuable property makes it a most desirable agent for illuminating the home and factory. The light also burns with great brilliancy in the open air, and the platinum gauze completely protects it from being blown out by strong currents of air.

THE Phœnix Iron Company is drilling for gas near Ashtabula, Ohio.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97⅛	100⅛	80⅜	77⅛
April	78¾	76⅝	84⅛	78¼	92⅜	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅜	69⅞
June	68⅜	100¼	81	54½	117¼	68¾	82¼	67
July	69⅞	101¼	76⅛	57⅝	108	63⅛	96⅜	66
August	67¼	90¾	78⅔	58⅔	108⅔	81 1-5	100¾	62
September	69¼	95½	92¼	71⅓	112½	78	100¾	63⅜
October	88⅛	96¾	92¾	93⅜	111⅛	71	105½	-----
November	105⅜	91¼	82⅓	114¾	114 4-5	72½	104⅜	-----
December	113¼	92⅞	83¾	95¼	114⅓	74⅜	89⅝	-----

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	SEPT., 1886.	AUG., 1886.
National Transit Co	1,658,635 77	1,776,676.11
Tidewater	201,314.98	210,790.16
Octave Oil Co	2,922.67	2,983.12
Shaffer Run	1,864.50	1,364.50
.....	.....	6,302.78
Pittsburgh Pipe Line	48,425.63	53,717.21
Southwest Pennsylvania	426,503.87	331,461.56
Total	2,339,668.42	2,383,295.44
Daily average	77,988.95	76,880.50

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	SEPT., 1886.	AUG., 1886.
National Transit Co	1,779,639.63	1,722,206.88
Tidewater	210,436.41	192,190 16
Octave Oil Co	3,037.90	2,507.70
Shaffer Run	.....	.....
.....	.....	5,666.12
Pittsburgh Pipe Line	46,279.44	43,777.70
Southwest Pennsylvania	277,087.83	263,151.30
Total	2,316,481.21	2,229,499.86
Less oil transferred between lines	218,526.56	216,082.84
Total	2,097,954 65	2,013,417.02
Daily average shipments	69,931.82	64,948.94

In the above shipments only the oil delivered to refiners is included.

Daily excess of runs over shipments, September	8,057.13
Daily excess of runs over shipments, August	11,931.56
Daily excess of runs over shipments, July	5,557.20
Daily excess of runs over shipments, June	4,793.41
Daily excess of runs over shipments, May	3,967.06
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October	5,064 07
Daily excess of shipments over runs, September	13,138.62
Daily excess of shipments over runs, August 1885	11,099.01

NET STOCKS.

PIPE LINE.	SEPT. 30, 1886.	AUG. 31, 1886.
National Transit Co	31,667,864.17	31,553,862.40
Tidewater	1,364,004.28	1,375,192.90
Octave Oil Co	4,168.44	3,635 66
Shaffer Run	24,531.64	24,031.64
.....	.....	46,460.95
Pittsburgh Pipe Line	17,212.48	9,939.51
Southwest Pennsylvania	559,764.95	410,348.91
Total	33,637,545.96	33,423,471.97

Stocks increased September	214,073.99
Stocks increased August	362,652.56
Stocks increased July	188,510.62
Stocks increased June	216,583.97
Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174.57
Stocks decreased February	436,146 69
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October	184,393 91
Stocks decreased September	408,862.12
Stocks decreased August 1885	390,529.99

	RECEIPTS.	DELIVERIES.
Daily average September	77,989	69,932
Daily average August	76,880	64,949
Daily average July	74,880	69,323
Daily average June	75,811	71,017
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October	61,070	66,134
Daily average September	58,067	71,206
Daily average August 1885	55,001	66,100

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

The Independent Refiners.

The independent refiners of the country have perfected an organization which is known as the Independent Petroleum Refiners' Bureau. Its objects are to secure, by combination, refiners' supplies at the most favorable prices, and freight at the best possible advantage. Mr. O. B. Skinner, late traffic manager of the C. C. C. & I. R. R. has been selected as freight commissioner. His headquarters will be in Room 2, 104 St. Clair street, Cleveland, and the duties of his office will be to obtain the best possible freight rates for the refiners he represents, as well as to watch for any unjust discriminations against them. The organization at present represents the following:

Pittsburgh—American Oil Works, Holdship & Irwin; Empire Oil Works, D. P. Reighard; A. D. Miller & Son.

Cleveland—Great Western Oil Works, Scofield, Shurmer & Teagle; the Excelsior Refining Company, H. W. Mather, Manager; the Cleveland Refining Company, Jno. Teagle, Manager; Brooks Oil Company, Alfred Whitaker, manager; the National Refining Company, Cleveland, O.; Pioneer Oil Company, J. W. Fawcett & Co.

Corry—Clark & Warren.

Buffalo—Buffalo Lubricating Oil Company, Limited, C. B. Matthews, President; Genesee Oil Works, J. C. & W. H. Bright.

Titusville—Rice, Robinson & Witherop; Crescent Oil Works, John Schwartz & Co.; American Oil Works, limited, F. Tacky, Treasurer; F. L. Wood.

Oil City—Continental Refining Company, limited, Louis Morris, Chairman; Independent Refining Company, limited, A. D. Demming, Secretary; Excelsior Oil Company, F. D. Cummer, President; Astral Refining Company, J. B. Berry, Secretary; Penn Refining Company.

Marietta—George Rice.

These refineries combined have a total capacity of 50,000 barrels of refined oil per week.

September Production Report:

Reports of the stocks on hand at 5839 Bradford wells showed an average increase of .6 barrels to the well during September:

Time.	No. Wells.	Gross Stocks.	Average per well.
September 1, 1886	5,796	270,394	46 7
October 1, 1886	5,839	276,386	47.3
Difference	43	5,992	.6

The number of wells in the Bradford field connected with the pipe lines on the first of October is estimated at 13,990. Estimating the entire Bradford region on the basis of .6 barrels increase, the total increase in stocks at wells during September was 8394 barrels, a daily average of 280 barrels. Adding the increase in stocks to the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for September is as follows:

	Barrels.
Average Daily Pipe Line Runs	26,394
Average Daily Increase of Stocks at Wells	280
Bradford's September Production, estimated	26,674
" August " "	26 695
Average Daily Decrease	21

THE ALLEGANY FIELD.

Stocks from 897 wells in the Allegany field show an average decrease of three-tenths barrels to the well, during September. With 4125 wells in the field on the first of October, the total decrease in stocks amounts to 1237 barrels, a daily average decrease of 41 barrels for the month of September. Subtracting this decrease from the pipe line runs, 6035 barrels, the remainder 5994 represents Allegany's daily yield for September. The estimated production for August was 6200 barrels a day.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Sept. 1.	No. Wells Oct. 1.	Average per well Sept. 1.	Average per well Oct. 1.
Clarendon and Tiona	221	24	222	24
Cherry Grove	22	22	48	34
Cooper District	125	125	33	34
Lower Country	126	124	77	71
Miscellaneous	153	148	117	139

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for September and August is as follows:

Field.	September. Barrels.	August. Barrels.
Bradford	26,674	26,695
Allegany	5,994	6,200
Outside Runs	45,560	43,762
Total	78.228	76,657

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, averaged 1672 barrels a day in September and 1945 barrels in August. The Lima runs were 2348 barrels a day in September and 1613 barrels in August.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18.330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,238	63,876	67,981
November	31,789	35,026	8,642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32.378	7,196	11,607	19.800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55.505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10,384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63,876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63,988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,267
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,586	27,051	6,651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59.764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505
June	27,860	29,272	6,554	7,463	40,040	21,559	74,454	58,294
July	27.046	30,309	6,350	7,139	40,491	19,273	73,887	56,721
August	26,695	29.858	6,200	7,065	43,762	22,830	76,657	55,531
September	26,674	30,205	5,994	7,186	45,560	21,269	78,228	58,660

While the Bradford field shows a decline of 3531 barrels in its daily production, since September, 1885, and Allegany of 1192 barrels, the increase in the outside fields brings the total production for September, 1886, 19,568 barrels in advance of the total for September, 1885.

MR. S. P. MCCALMONT, of Franklin, has a well on the Allegheny river, opposite Reno, which is twenty-four years old and still pumping about two barrels a day. It started originally at 40 barrels.

BLUE print maps of the Ohio oil fields to be had at the AGE office.

Natural Gas Items.

Toledo will be supplied with natural gas by January 1, 1887.

The Pennsylvania Natural Gas Company has seventeen wells connected on its line to Pittsburgh.

The Bridgewater Gas Company has bought out the Phillipsburg Gas Company. Both have been operating in Beaver county.

The Elk Gas Company, of Ridgway, with a capital of $50,000, has been incorporated. M. S. Kline is treasurer of the company.

The Wheeling Natural Gas Company has six wells in the Hickory gas district, Washington county, and will complete two more this fall.

Carnegie, Phillips & Co.'s steel works, at Homestead, are no longer connected with the mains of the Philadelphia Company, being supplied by their own line from Murraysville.

The Buffalo Natural Gas Fuel Company has fixed the rates for supplying natural gas to consumers at 75 cents per 1000 cubic feet. The discount allowed makes the net rates 60 cents per thousand.

The Central Oil and Gas Well Mining Company is the title of a new organization at Martel, Ohio. Messrs. M. McHurstry, A. Cochran. James Dickson, S. Brownlee, J. V. Harrison, W. C. Bennett, E. Armstrong, George W. Crane and C. F. Garberson, are corporators.

The Northwestern Ohio Natural Gas Company, of Fostoria, Ohio, is officered as follows: President, ex-Governor Charles Foster; Secretary and Treasurer, J. S. Wilkison; Manager, C. N. Payne; Directors, Charles Foster, J. E. Wilkison, W. C. Lement, C. N. Payne, W. T. Scheide, Daniel Lesler and Daniel O'Day. The first well of the company, located five and a half miles west of the city, has been bored and has a yield of 3,000,000 cubic feet of gas a day. The capital stock of the company is $200,000.

The Pine Run Gas Company, composed of Mr. E. M. Hukill, George R. Stewart, and others, holding property on the north end of the Murraysville belt, have one nice gas well in, and expect soon to complete the second. They are laying an 8-inch line to Freeport, a distance of eleven miles, and from there they will run 6-inch branch lines to Apollo and Leechburg. This work they hope to complete this fall. In addition to the Apollo field, where additional wells are being put down at the present, the company owns gas territory in Tarentum. To reach this and place the supply beyond danger of being impaired by cold weather, it is contemplated to lay a similar 8-inch line from Freeport, reaching and supplying the boroughs along the Allegheny river. The Tarentum line will be about eight miles in length. Hukill & Co. built and operated the Carpenter line until its absorption by the Philadelphia Company. Spang, Chalfant & Co. are making the pipe.

The existence of natural gas has been known for centuries, and it has been utilized in a small and desultory way in various parts of Western Pennsylvania for at least a half century. The wells at New Cumberland, W. Va., have supplied gas for more than twenty years for the manufacture of bricks. The East Liverpool wells have been burning for twenty-five years, and are still productive. At Leechburg and Appollo, the gas has been used in heating and puddling furnaces since 1872. At Beaver Falls, natural gas has been used since 1876 in the cutlery works; but about two years ago the gas failed, presumably on account of the wells becoming obstructed by more or less solid matter. The Butler county oil field was the first in which the large productive wells of natural gas were struck. The mill of Spang, Chalfant & Co. has been supplied from this field since 1875. In 1877, the first well, known as the Haymaker well, was bored at Murraysville. It was not until 1883 that this immense storehouse of potential energy was made useful by Pew & Emerson, who laid a line of pipe from the Murraysville well to and into the city of Pittsburgh. In June, 1884, the celebrated Westinghouse well, located in the Twenty-first ward of the city of Pittsburgh, struck the gas at a depth of about 1600 feet, and from that date the development of gas wells in this vicinity has been enormous, and its adoption as a fuel by the manufacturing establishments of the city and county has been general,—*Wm. P. Shinn.*

SUMMARY of the Statements of the National Transit Company for September and August:

	SEPTEMBER. Barrels.	AUGUST. Barrels.
Receipts from all sources	1,900,084.06	1,992,758.95
Deliveries	1,779,639.63	1,722,206 88
Gross stocks end of month	35,230,699.10	35,245,528.10
Sediment and surplus	3,562,834.93	3,691,665.70
Total liabilities end of month	31,667,864.17	31,553 862.40
Outstanding acceptances	25,110,087.78	24,982,510.58
Credit balances	6,557,776 39	6,571,351.82

The above "receipts from all sources" for September were made up as follows:

Runs from wells	1,658,635.77
Received from other lines	218,526.56
Received in iron tanks	22,921 73
Total	1,900,084 06

The above "receipts from all sources" for August were made up as follows:

Runs from wells	1,776,676.11
Received from other lines	216,082.84
Total	1,992,758.95

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for September, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of September		1,375,192.90
Quantity of crude petroleum at close of Sept.	1,513,278.97	
Less sediment and surplus	149,274.69	
		1,364,004 28
Receipts during September		201,314.98
Deliveries during Sept.—to refiners	210,436.41	
" " " to other parties		210,436.41
Outstanding certificates, accepted orders, etc.		740,000 00
Credit balances		624,004 28
Total liabilities, September 30, 1886		1,364,004.28

AUGUST SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of August		1,358,882.30
Quantity of crude petroleum at close of Aug.	1,523,058.66	
Less sediment and surplus	147,865.76	
		1,375,192.90
Receipts during August		210,790.16
Deliveries during August—to refiners	192,190.16	
" " to other parties		192,190.16
Outstanding certificates, accepted orders, etc.		729,000.00
Credit balances		646,192.90
Total liabilities August 31, 1886		1,375,192.90

ACCORDING to the figures of the annual report of the Secretary of Internal Affairs, of this State, the refined business proved anything but profitable during the year 1885. In the entire State the amount of materials consumed at the refineries was $12,621,880, and the amount paid for wages $1,372,662, making a total expenditure of $13,994,542, while the value of the product was $15,061,173, showing a profit of only 8.4 per cent. on wages and material, allowing nothing for capital or expense of management.

POCKET maps of Warren county on sale at AGE office.

OPPERMAN'S Middle Field pocket maps for sale at AGE office.

ACME OIL COMPANY,

REFINERS OF PETROLEUM

MANUFACTURERS OF THE

CROWN ACME OIL

Prepared with Great Care for Family Use.

ABSOLUTELY SAFE,

AND THE

Best Illuminator in the World.

WORKS AT OLEAN, N. Y., & TITUSVILLE, PA.

MAIN OFFICE, 26 BROADWAY, N. Y.

GAS WELL PACKER.

(PATENT APPLIED FOR.)

For Use on Small Casing or Tubing

Does not require anchorage or any other support from below.

This Packer, when lowered to desired place in well, is set out by screwing the top flange down upon the rubber. The lower part of the Packer is held from turning while the top is being screwed down by the steel bars and wheels which allow the Packer to be lowered or raised but not to turn. The rubber is set out or opened up with great ease as the top flange turns on a bearing of brass and steel, doing away with all friction.

The cut represents a 3¼ inch Packer. They are made in three sizes—2 inch, 3 inch and 3¼ inch. When set out the Packer not only supports the weight of the small casing or tubing, but has stood a gas pressure upwards of 380 pounds to the square inch, equalling a total pressure of nearly five tons on the whole Packer.

———:(o):———

PUMPING PACKER

(PATENT APPLIED FOR.)

Especially adapted for old wells having leaky casing, or for shutting off salt or fresh water from any other sources.

This Packer slips easily on the tubing and rests upon a coupling. After the tubing is put in, a small pipe, ¾ inch or 1 inch, is lowered until it strikes the guide by which it is made to settle into the seat, provided with gasket, making a tight continuous joint. The weight of the small pipe sets out the rubber. This has the advantage over all other Pumping Packers that the tubing can be hung from the casing head. There can be no trouble in starting this Packer, as by lifting the small pipe the fluid above the Packer falls into the hole, thus taking off all pressure on the Packer. As the fluid runs in it can be pumped out before the tubing is pulled.

In case where the weight of the small pipe may not be sufficient to set out the rubber we put a screw joint and bearings above the rubber, by which the upper flange is screwed down in the same manner as in the Gas Well Packer; in other respects this Packer being similar to the one just described.

———:(o):———

FLOWING PACKERS.

Besides these specialties we make the common Flowing Cone Packer, the best and simplest Flowing Packer in use. We have improved our patterns, making the cone stronger and a longer jar. Our Packers have a small cone, thus combining the advantages of a Cone and Flange Packer.

———:(o):———

PRICES:

GAS WELL PACKERS.

2 inch	each,	$40.00
3 "	"	50.00
3¼"	"	50.00

PUMPING PACKERS.

Without Screw	each,	$15 00
With Screw	"	25.00

COMMON CONE PACKERS.

Each, $15.00. Dozen, $150.00.

Discounts to Dealers in Oil Well Supplies.

THE HOADLEY PACKER CO., Limited,

——MANUFACTURERS OF——

Gas, Pumping and Flowing Well Packers,

115 Washington Street, Bradford, Pa.

I. N. HOADLEY, Agent. F. H. NEWELL, Sec'y and Treas.

First National Bank

—OF—

BRADFORD, PA.

Capital, $150,000. Surplus, $30,000.

S. G. BAYNE, Pres't, J. M. FULLER, Vice-Pres't.

W. W. BELL, Cashier.

DIRECTORS:

T. W. BROWN, Vice-President Provident Life Trust Co., Philadelphia; C. M. FARRAR, of Farrar & Trefts, Buffalo; L. F. LAWTON, Cashier First National Bank, Olean, N. Y.; A. B. WALKER; F. W. DAVIS; C. C. MELVIN; J. M. FULLER; S. G. BAYNE, W. W. BELL.

STOCKHOLDERS.

Daniel O'Day, Joseph Seep, W. A. Pullman, Byron D. Hamlin, Henry Hamlin, A. G. Olmsted, L. Emery Jr., J. T. Jones, C. E. Hequembourg, L. E. Hamsher, Jno. McKeown' Robert C. Simpson, W. R. Weaver, F. D. Wood, Asher Brown, John Ley, P. L. Webster, Jos. Stettheimer, H. A. Marlin, Robert Long, I. W. Shirley, A. Hochstetter, Sheldon Jewett, P. W. Roth, James E. Blair. A. B. Smith, Kenton Saulnier, E. T. Howes, George H. Mills.

Transact general banking business. Make collections, sell drafts on Europe, and give prompt attention to all business entrusted to us at lowest rates.

Bradford National Bank

—OF—

BRADFORD, PENN'A.

Capital, $100,000. Surplus, $200,000.

O. F. SCHONBLOM, Pres't. P. T. KENNEDY, Vice-Pres't.

T. H. TOMLINSON, Cashier. C. A. MITCHELL, Asst. Cashier.

DIRECTORS:

P. T. Kennedy, W. C. Kennedy, R. J. Straight
O. F. Schonblom, H. F. Whiting.

TRANSACT A GENERAL BANKING BUSINESS.

Make collections; sell drafts on Europe; buy and sell United States bonds.

☞Prompt attention given to all business entrusted to us at the Lowest Rate of Charges.

HUGH T. ARTERS. JOHN L. O'DONNELL.

ARTERS & O'DONNELL,

BROKERS IN OIL AND GAS PROPERTY,

Office, 2d Floor Above Pipe Line Office. - WASHINGTON, PA.

OIL AND GAS PROPERTY BOUGHT AND SOLD.

We have unexceptional facilities for both Producer and Land Owner, being personally acquainted with the field and its developments; and would advise Producers and Farmers to see us before selling or purchasing land.

THE LIGHT RUNNING

SIMPLE STRONG

NEW HOME

SWIFT SURE

SEWING MACHINE

HAS NO EQUAL.

PERFECT SATISFACTION

New Home Sewing Machine Co.

—ORANGE, MASS.—

30 Union Square, N. Y. Chicago, Ill. St. L[illegible] Mo.

Atlanta, Ga. Dallas, Tex. San Francisco, Cal.

FOR SALE BY

C. H. DUBOIS, BRADFORD, PA.

Chicago & Atlantic R. R. Co.

TIME TABLE IN EFFECT SUNDAY, JULY 11, 1886 .

WESTWARD.

STATIONS.	No. 3. Pac. Ex.	No. 5. Ch. L. Ex.	No. 1. Chi. Exp.
Marion Lv	10 55p.m.	2 00p.m.	8 25a. m.
Kenton	11 45p.m.	2 38p.m.	9 18a. m.
Preston	.....	.....	9 46a. m.
Lima	12 29p.m.	3 16p.m.	10 15a. m
Spencerville	.....	.....	10 43a. m.
Decatur	1 47a. m.	4 24p.m.	11 46a. m.
Huntington ....Ar	2 43a. m.	5 12p.m.	12 50p.m.
Huntington Lv	2 48a. m.	5 18p.m.	1 05p.m.
Akron	.....	.....	2 14p.m.
Rochester	4 05a. m.	6 27p.m.	2 35p.m.
North Judson	5 02a. m.	.....	3 40p.m.
Crown Point	6 02a. m.	.....	4 54p.m.
Hammond	6 30a. m.	8 28p.m.	5 40p.m.
Chicago ....Ar	7 30a. m.	9 30p.m.	6 45p m.

EASTWARD.

STATIONS.	No. 12. Atl. Ex.	No. 8. N. Y. Ex.	No. 10. Mail Ex.
Chicago Lv	7 45p.m.	4 20p.m.	8 30a. m.
Hammond	8 48p.m.	5 18p.m.	9 30a. m.
Crown Point	9 16p.m.	5 40p.m.	10 02a. m.
North Judson	10 20p.m.	.....	11 25a. m.
Rochester	11 17p.m.	7 20p.m	12 35a m.
Akron	11 34p.m.	.....	1 00p.m.
Huntington ....Ar	12 45a. m.	8 30p.m.	2 15p.m.
Huntington Lv	12 50a. m.	8 45p.m.	2 30p.m.
Decatur	1 47a. m.	9 35p.m.	3 30p.m.
Spencerville	2 44a. m.	10 21p.m.	4 43p.m.
Lima	3 08a. m.	10 40p.m.	5 11p.m.
Preston	.....	.....	5 40p.m.
Kenton	4 00a. m,	11 18p.m.	6 08p m.
Marion ....Ar	4 45a. m.	12 07p.m.	7 00p.m.

Trains run on Central Standard time.

Train 8 has Pullman Buffett Car, Chicago to New York daily, through without change.

Train 12 has Pullman Buffett Sleeping Car to Boston and New York daily.

Train 3 has Pullman Buffett Sleeping Coaches from Boston and New York daily.

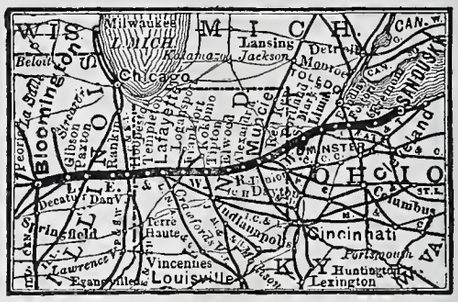
Train 5 has Pullman Buffett Sleeping Coaches from New York to Chicago.

All through passenger trains arrive at and depart from the new Dearborn Station, Chicago.

Passengers going East or West will find it to their advantage and interest to consult the agents of this company, who will give them all information in regard to rates and connections.

F. BROUGHTON, General Manager, Chicago. S. W. SNOW, General Passenger Agent.

LAKE ERIE & WESTERN R'Y.



THE SHORT LINE BETWEEN THE EAST & WEST.

The shortest and most direct route, making immediate connections for passengers east and west.

CONDENSED TIME OF THROUGH TRAINS.

SEPTEMBER 20, 1886.

WESTWARD.		CENTRAL TIME.	EASTWARD	
		I. C. Ry		
10 15 p m	9 50 a m	Ar.....Sioux City.....Lv	4 50 p m	7 50 a m
7 40 a m	7 45 "	" .....Dubuque ..... "	6 30 a m	9 50 p m
2 18 "	9 15 a m	Lv....Bloomington ....Ar	3 17 p m	8 20 a m
		I B & W. R'y		
9 20 a m	7 15 p m	Ar...Council Bluffs...Lv	6 00 p m	9 10 a m
8 40 p m	6 20 a m	.....Burlington.....	2 35 p m	10 30 p m
5 10 "	7 45 a m	.....Peoria.....	7 10 p m	6 45 a m
2 55 "	5 20 a m	Lv....Bloomington ....Ar	9 25 p m	9 10 a m
		C & A Ry		
7 10 p m	7 00 a m	Ar.....Omaha.....Lv	9 05 p m	7 50 a m
12 25 n'n	1 00 p m	.....St Joseph.....	2 45 p m	3 00 p m
11 55 a m	11 55 p m	.....Atchison.....	3 15 a m	3 20 p m
8 50 "	9 15 "	.....Kansas City.....	6 00 a m	6 45 p m
5 50 p m	6 30 a m	Lv....Bloomington ....Ar	9 00 p m	8 55 a m
		C & A Ry		
7 45 p m	7 45 a m	Ar..... St. Louis Lv	7 55 p m	7 50 a m
1 45 "	2 10 a m	Lv....Bloomington ....Ar	2 10 a m	1 45 p m
		L. E. & W. Ry.		
1 25 p m	1 35 a m	Ar.....C & A Junc.....Lv	2 20 a m	9 20 a m
1 15 "	1 25 a m	..... Bloomington.....	2 30 "	9 30 a m
11 40 a m	11 58 p m	..... Gibson	4 02 "	10 51 a m
11 02 "	11 18 "	..... Paxton	4 38 "	11 24 a m
10 10 "	10 20 "	.....Hoopeston	5 34 "	12 30 p m
9 10 "	9 20 "	.....Templeton.....	6 38 "	1 24 "
8 25 "	8 25 "	.....LaFayette.....	7 45 "	2 20 "
8 04 "	8 04 "	.... LaFayette Junc.....	7 52 "	2 25 "
7 04 "	7 02 "	.....Frankfort.....	8 53 "	3 16 "
6 08 "	6 02 "	..... Tipton.....	9 55 "	4 10 "
5 36 "	5 38 "	.....Elwood	10 21 "	4 32 "
5 15 "	5 17 "	.....Alexandria	10 42 "	4 51 "
4 35 "	4 35 "	.....M ncie.....	11 35 "	5 45 "
3 46 "	3 42 "	..... Red Key	12 15 p m	6 25 "
3 18 "	3 13 "	.....Portland	12 42 "	6 20 "
2 14 "	2 07 "	.....Celina.....	1 44 "	7 52 "
1 50 "	1 42 "	..... St Mary.....	2 07 "	8 13 "
12 45 "	12 45 "	Lv Ar	3 05 "	9 15 "
12 35 "	12 25 "	Ar.....Lima Lv	3 15 "	9 25 "
12 00 p m	11 49 a m	Lv.....Bluffton.....Ar	3 48 "	10 02 "
11 21 "	11 12 a m	.....Findlay	4 25 "	10 38 "
11 00 "	10 52 a m	.....Arcadia	4 46 "	11 00 "
10 43 "	10 37 a m	.....Fostoria.....	5 00 "	11 15 "
10 10 "	10 07 a m	..... Burgoon.....	5 32 "	11 44 "
9 45 "	9 45 a m	..... Fremont.....	6 05 "	12 10 a m
8 40 p m	8 45 a m	.....Sandusky.....	7 00 "	1 00 "
		P. F. W. & C. R'y		
11 10 p m	9 50 a m	Ar..... Lima Lv	4 10 p m	4 40 p m
7 05 p m	10 10 a m	Lv.....Crestline .....Ar	1 15 p m	7 55 p m
12 40 "	11 15 p m	..... Pittsburgh	5 30 a m	3 35 a m
3 10 a m	3 40 p m	.....Harrisburg	1 55 p m	3 20 p m
11 30 p m	10 55 a m	.....Baltimore.....	5 50 p m	6 50 p m
11 20 "	11 50 a m	.....Philadelphia	4 45 p m	9 35 p m
8 00 p m	9 00 a m	..... New York.....	6 55 p m	6 50 p m
		L S & M S R'y		
.....	8 40 a m	Ar..... Sandusky.....Lv	.....	6 05 a m
9 42 p m	.....	.....Fremont	6 32 p m	.....
6 40 "	6 30 a m	Lv.....Cleveland .....Ar	9 40 p m	8 25 a m
11 55 a m	11 55 p m	..... Buffalo	3 30 a m	2 45 p m
2 15 "	3 00 p m	..... Albany	2 20 p m	2 00 a m
9 15 p m	10 30 a m	..... New York.....	7 00 p m	7 00 a m
7 00 "	8 30 a m	Lv.....Boston .....Ar	9 45 p m	6 35 a m

Through tickets on sale to all important points. For information in regard to tickets, rates, &c. inquire of Ticket Agents at principal ticket offices, or address,

G. W. SMITH,
Gen'l Pass. Agent,
BLOOMINGTON, ILL.

MAPS OF THE VARIOUS OIL FIELDS

FOR SALE BY

McMULLEN, SNELL & ARMOR, Bradford, Pa.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JUNE 14th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
N. Y., L. E. & W. R. R		P. M.	A. M.	A. M.	A. M.
Bradford ..... Lv.	.....	2 20	.....	6 15	11 40
Mt Jewett ..... Lv.	.....	5 00	.....	7 40	12 30
Kane	.....	5 40	.....	10 46	1 20
Sheffield Junction	.....	.....	.....	11 40	2 15
Marienville	.....	.....	.....	12 20	3 02
Tylersburg	.....	.....	.....	1 00	3 48
Clarion Junction	.....	.....	7 00	1 40	4 30
Clarion	—	.....	6 30	1 15	4 05
Shippenville	23	.....	7 12	1 53	4 45
Knox		.....	7 30	2 08	5 00
St. Petersburg	A. M.	.....	8 20	2 48	5 40
Foxburg	5 40	.....	8 50	3 25	5 55
Parker	5 50	.....	9 00	3 42	.....
Bruin	6 08	P. M.	9 20	4 02	P. M.
Petrolia	6 18	—	9 32	4 15	—
Karns	6 22	27	9 38	4 20	9
Millerstown	6 36	—	9 55	4 38	—
St. Joe	6 50	A. M.	10 08	4 53	P. M.
Butler	7 20	8 38	10 40	5 40	1 55
Renfrew	7 41	8 55	11 00	6 00	2 11
Callery Junction	8 10	9 20	11 25	6 25	2 35
Allegheny ..... Ar.	10 30	10 30	12 40	7 35	3 58
	A. M.	A. M.	P. M.	P. M.	P. M

NORTHBOUND TRAINS.

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A. M.	P. M	P. M.
Allegheny ..... Lv.	6 00	9 20	7 20	1 46	5 35
Callery Junction	7 30	10 40	8 34	3 07	6 50
Renfrew	7 58	11 00	8 55	3 29	7 12
Butler	8 20	11 20	9 15	3 55	7 33
St. Joe	.....	.....	9 40	4 25	8 00
Millerstown	.....	A. M.	9 55	4 38	8 14
Karns	.....	—	10 12	4 54	8 28
Petrolia	.....	20	10 16	4 58	8 32
Bruin	.....	—	10 32	5 10	8 43
Parker	.....	A. M.	10 52	5 28	9 00
Foxburg	.....	6 25	11 25	6 00	9 10
St. Petersburg	.....	6 40	11 40	6 17	.....
Knox	.....	7 30	12 25	7 00	.....
Shippenville	.....	7 48	12 40	7 18	.....
Clarion Junction	.....	8 02	12 55	7 30	P. M.
Clarion	.....	8 25	.....	8 00	—
Tylersburg	.....	8 59	1 30	.....	22
Marienville	.....	9 18	2 10	.....	—
Sheffield Junction	.....	10 00	2 50	.....	A. M.
Kane	.....	10 55	3 35	.....	6 30
Mt. Jewett ..... Ar.	.....	12 10	4 40	.....	7 10
Bradford ..... Ar.	.....	2 05	6 05	.....	9 15
		P. M.	P. M.	P. M.	A. .

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.35 a. m., New Castle Accommodation 3.10 p. m., Chicago Express, with through Sleeping Car 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAINS Nos. 23 and 26 will run daily. Nos. 18 and 17 will run daily between Butler and Allegheny. No. 23 connects at Callery Junction for Allegheny and New Castle. No. 26 gets connections from Allegheny and New Castle All other trains run daily, except Sunday.

THOS. M. KING, General Manager.

C. W. BASSETT, General Passenger Agent.

Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT MAY 10, 1886.

[Read Down.]		Central Time.	[Read Up.]	
5 00a.m.	8 15a.m.	Bradford	6 20p.m	11 35 a.m
5 30a.m.	10 55a m.	Salamanca	4 13p.m.	8 00 a m
6 45a.m.	11 55a m.	Jamestown	3 08p.m.	7 09 a.m
9 20a.m.	2 20p.m.	Meadville	12 50p m.	5 15 a.m
10 55a.m.	5 40p.m.	Youngstown	10 35a.m.	1 25 a.m
12 52p.m.	7 30p.m	Shousetown	8 26a m.	11 25 p.m
1 30p m.	8 00p m.	Pittsburgh	7 45a m.	10 45 p m

W. C. Quincy, General Manager.

A. D. Smith, General Pass. Agent.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R.R

JUNE 20, 1886.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	7 35a.m.	3 20p.m.	7 35a.m.
Grand Valley	8 03a.m.	3 48p m.	8 01a.m.
Irvineton	8 45a.m.	4 36p.m.	8 44a.m.
Warren	8 58a.m.	4 53p.m.	8 56a.m.
Junction	9 55a.m.	5 45p.m.	9 48a.m.
Lily Dale	10 50a.m,	6 36p.m.	10 37a.m.
Dunkirk, arrive	11 25a m.	7 10p.m.	11 12a m.

Going South.	Mail. No. 1.	Express. No. 3.	Sunday. No. 5.
Dunkirk, leave	9 25a.m.	4 00p.m.	2 40p.m.
Lily Dale	10 03a.m.	4 38p.m.	3 14p.m.
Junction	11 02a.m.	5 45p.m.	4 08p.m.
Warren	11 55a.m.	6 44p.m.	5 06p.m.
Irvineton	12 10a.m.	7 00p.m.	5 22p.m.
Grand Valley	12 58p.m.	7 49p.m.	6 12p.m.
Titusville Ar	1 20p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p. m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily. Uniontown, 10:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m, Arrive 7:00, 9:00, 10:20 a. m., 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.

B. DUNHAM, General Manager.

E. P. SMITH, Division Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after May 31st, '86, trains will leave Emporium as follows:

For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:25 a. m., and 9:05 p. m. on week days. Pullman sleeping car on the 9:05 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 10:40 a. m. week days.

For Kane and intermediate stations, 10:40 a. m. and 7:05 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.

CHAS. E. PUGH, General Manager.

SHENANGO & ALLEGHENY R. R.

TAKES EFFECT MONDAY, OCT. 11, 1886.

Trains are run by Standard Central Time (90th Meridian.)

NORTHWARD. 6	4	2	STATIONS.	SOUTHWARD. 1	3	5
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 05	2 25	10 40	Ar ..... Greenville ..... Dp	6 07	11 10	3 20
7 55	2 15	10 30	..... Shenango	6 17	11 20	3 33
7 41	1 59	10 17	..... Kremis	6 29	11 31	3 44
7 31	1 47	10 08	..... Fredonia	6 37	11 40	3 52
7 24	1 40	10 02	..... Coolspring	6 42	11 45	3 56
7 23	1 38	10 01	..... Kerby Siding	6 43	11 46	3 57
7 12	1 26	9 50	..... Mercer	6 57	11 58	4 08
7 02	1 15	9 40	..... Pardee	7 07	12 08	4 17
6 57	1 07	9 36	..... Filer	7 11	12 12	4 22
6 49	1 00	9 29	..... Grove City	7 19	12 22	4 28
6 46	12 55	9 26	..... Re d	7 20	12 24	4 30
6 35	12 40	9 16	..... Harrisville	7 33	12 40	4 41
6 30	12 34	9 12	..... Wick	7 37	12 45	4 45
6 25	12 29	9 07	..... Branchton	7 42	12 50	4 50
6 22	12 25	9 05	..... Coaltown Junction	7 44	12 52	4 52
6 19	12 22	9 03	..... Keisters	7 47	12 55	4 55
6 11	12 14	8 56	..... Hallston	7 56	1 03	5 02
6 02	12 04	8 46	..... Euclid	8 07	1 13	5 11
5 53	11 54	8 37	..... Jamisonville	8 17	1 22	5 19
5 45	11 45	8 30	..... Oneida	8 30	1 31	5 25
5 35	11 35	8 20	..... P. & W. Junction	8 40	1 42	5 35
5 25	11 30	8 15	Dp ..... Butler ..... Ar	8 43	1 45	5 37
			Pittsburgh & Western R. R.			
3 30	9 20	6 00	..... Allegheny	10 30	3 58	7 35
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.

HILLIARD BRANCH.

10	12	STATIONS.	9	11
A. M.	A. M.		A. M.	P. M.
12 00	7 30	Ar ..... Branchton ..... Dp	9 10	6 30
11 50	7 20	..... Bovard	9 20	6 35
11 30	6 56	..... Annandale	9 40	7 00
11 20	6 48	..... Roy	9 50	7 10
11 00	6 40	Dp ..... Hilliard ..... Ar	10 00	7 20
A. M.	A. M.		A. M.	P. M.

Trains 4 and 5 run daily with through coach service between Allegheny, Chautauqua Lake and Jamestown, N. Y. All other trains daily except Sunday.

I. D. STINSON, G. P. A., Greenville, Pa.

J. T. BLAIR, Gen. Man., Greenville, Pa.

Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARRISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) and arriving at Olean at 10·57 a. m. Connects at Olean for Bradford.

Train leaves Buffalo at 2:00 p. m. (except Sunday) arriving at Olean at 4:35 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:20 p. m. (daily) arrives at Olean at 8:20 p. m.

Train for Buffalo leaves Olean at 5:40 (daily) and 10:45 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:25 p. m.

Afternoon train leaves Olean at 3:58 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass. and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				May 23, 1886.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun
A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.
------	------	6 22	10 51	Ar. Richburg Lv	------	8 22	2 30	------
------	------	6 17	10 45	" Bolivar "	------	8 35	2 37	------
11 00	6 00	3 55	8 58	" Olean "	7 20	11 00	5 10	3 30
9 15	4 15	2 15	7 15	Lv. Bradford Ar	9 00	12 45	6 55	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 20	3 05	8 30	Ar. .....Eldred ..... Lv.	7 10	11 35	3 35
5 00	2 38	8 12	" ....Duke Centre... "	7 28	11 53	4 01
4 05	1·20	7 15	" .....Tarport..... "	8 25	12 50	5 25
3 50	1 10	7 10	Lv. .....Bradford..... Ar.	8 30	12 55	5 35
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			May 23, 1886.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	12 45	9 40	Lv.....Kinzua .....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren .....Ar	------	11 50	6 49
5 15	------	8 50	" ..... Irvineton ..... "	------	12 05	7 05
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	------	8 45	Lv.....Pittsburgh.....Ar	------	8 25	7 40
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

July 18, 1886—Eastern Time.

				STATIONS.				
P. M.	A. M.	P. M.	A. M.		A. M.	M.	A. M.	P. M.
------	------	6 25	11 00	Ar. Buffalo.. Lv	8 00	5 05	------	------
9 37	------	------	------	" Rochester "	------	------	7 50	5 40
------	9 40	------	------	" Salamanca "	------	------	11 48	10 09
5 17	5 35	3 30	8 00	Lv. Bradford. Ar	11 00	8 00	12 30	10 55
4 35	5 00	P. M.				P. M.	P. M.	
		2 15	------	Ar do Lv	------	12 55	------	------
------	------	11 40	------	" Ridgway "	------	3 26	------	------
------	------							
		9 56	------	" Falls Creek "	------	4 55	------	------
------	------	9 50	------	" Dubois "	------	5 02	------	------
------	------							
		8 35	------	Lv Clayville Ar	------	6 10	------	------
------	------	A. M.						

☞ Thousand Mile Tickets sold at Two Cents per mile. ☜

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Sup't. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	a	b		b	a	b
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.
5 20	10 43	8 30	Ar..... Bradford.....Lv	7 05	3 35	1 00
4 38	10 03	7 50	Lv... Kinzua Junction... "	7 50	4 20	1 45
4 10	9 55	7 40	" ..... Aiken ..... "	8 03	4 28	1 53
3 56	9 41	7 26	" .....Simpson..... "	8 19	4 44	2 09
3 15	9 00	6 45	" .....Smethport.....Ar	9 00	5 25	2 50
4 29	9 54	7 40	" .....Rew City.....Lv	7 59	4 29	------
4 06	9 33	------	" ..... Rixford..... "	8 15	4 45	------
4 01	9 28	------	" .....Duke Centre..... "	8 20	4 50	------
3 44	9 11	------	" ..... .Eldred ..... "	8 37	5 07	------
3 27	8 54	------	" ..... Bullis Mills..... "	8 54	5 24	------
3 11	8 38	------	" ....Ceres..... "	9 10	5 40	------
2 57	8 24	------	" .... Little Genesee..... "	9 24	5 54	------
2 48	8 10	------	Ar..... Bolivar..... Lv	9 33	6 03	------
2 23	7 46	------	Lv..... Allentown ....., "	9 57	6 27	------
P. M.	A. M.	A. M.				
1 50	7 13	------	Lv..... Wellsville..... Ar	10 30	7 00	------
A. M.	A. M.	P. M.	N. Y., L. E. & W. R R.			A. M.
8 40	3 15	7 45	Ar..... Hornellsville.....Lv	12 03	8 40	12 50
------	------	------	" .....Elmira..... "	1 27	10 20	2 15
P. M.	P. M.	A. M.				
	------	------	" .....Binghamton..... "	2 55	12 12	3 45
9 00	6 00	9 00	Lv.....New Yo k.....Ar	8 55	7 30	9 55

Additional traio leaves Wellsville daily, except Sunday, at 4.20 p. m., arriving at Allentown at 5.05, and Bolivar at 5.40 p. m.

Add tional train leaves Bolivar daily, except Sunday at 9.40 a. m., arriving at Eldred at 11.00 a. m. and Bradford at 3.00 p. m.

Tickets for sale at the Union depot.

a—Runs daily. b—Runs daily except Sunday.

JOHN C. McKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect June 14, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo Lv	7 45a. m.	12 30p.m.	4 45p.m.	.....
Oak Harbor..... Ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde.....	9 23	2 03	6 18	.....
Bellevue.....	9 38	2 18	6 32	.....
Monroeville..... Lv	9 57	2 32	7 01	1 35a. m.
Norwalk.....	10 13	2 50	7 20	1 50
Wellington	11 03	3 45	9 00	2 32
Creston..... ..... Ar	11 52	4 33	10 45	3 15
Orrville ..... Ar	12 20p.m.	5 05	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 05	6 00a. m.	6 00
Massillon .....Ar	1 20	5 45	6 40	6 40
Massillon.....Lv	1 20	5 45	6 40	6 40
Bowerston .....Ar	3 00p.m.	7 35p.m.	9 40a, m.	9 40a.m.
Canal Dover.....	2 38p.m.	.....	8 00a. m.	8 00a.m.
Newcomerstown	3 27	.....	8 47	8 47
Cambridge.....	4 30	.....	9 45	9 45
Macksburg	6 10	.....	11 38	11 38
Marietta ... .Ar	7 20p m.	.....	12 50p.m.	12 50p.m.

WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta Lv	6 20a. m.	2 30p.m.	.....	.....
Macksburg.....	7 25	3 42	.....	.....
Cambridge.	8 54	5 20	.....	.....
Newcomer-town	9 48	6 20	.....	.....
Canal Dover.....	10 28 a.m.	6 55p.m.	.....	.....
Bowerston	11 50 a m.	3 30p.m.	6 25 a.m.	.....
Massil on.....	1 20p.m.	8 45	8 12	.....
Orrvi le.....Ar	1 55	9 55	8 50	.....
Orrville.....Lv	2 00	10 15*	8 50	.....
Creston Lv	2 30	10 45	9 22	.....
Wellington	3 18	11 28	10 10	*
Norwalk.....	4 10	12 10	11 25	7 25a. m.
Monroeville.....	4 12	12 25a. m.	11 37	7 37
Bellevue	4 40	*	11 55	7 53
Clyde	4 56	.....	12 10p.m.	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo..... .....Ar	6 35p.m.	----	1 55p.m.	9 45a. m.

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
5 15p.m.	11 40 a.m.	Ar.....Huron.....Lv	6 25a. m.	2 05p.m.
4 30p.m.	10 45 a.m.	Lv.....Norwalk.....Ar	7 15a. m.	3 00p.m.

* Daily.

This road is now open through from Toledo to Bowerstown, connecting with the Pennsylvania System for all points East.

THROUGH CAR SERVICE—Between Toledo, Cambridge and Marietta; Toledo and Bowerstown; Toledo and Akron, Youngstown and Pittsburgh; Chicago, Akron, Youngstown and Pittsburgh.

M. D. WOODFORD, General Manager. JAMES M. HALL, Gen'l. Pass. Agent.

THE PETROLEUM AGE.

VOL. V. BRADFORD, PA., NOVEMBER, 1886. NO. 10.

THE CRITICISMS OF THE ANTICLINAL THEORY OF NATURAL GAS.

READ AT THE BUFFALO MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, AUGUST, 1886, BY I. C. WHITE.

THROUGH inexcusable carelessness (for I cannot be so uncharitable as to charge intentional misrepresentation,) the critics of the "Anticlinal Theory" of Natural Gas, have invariably misapprehended its claims, and criticised something other than this theory as held and promulgated by the writer.

My critics have almost invariably written about the theory as though it had been claimed that large gas wells could be found everywhere on every anticlinal roll, and in no other situation whatever. Messrs. Ashburner, Chance and Carll, of the Pennsylvania Survey, have all set up for themselves this "man of straw," and of course easily demolished him, since no one with whom I have any acquaintance has ever held or published any such theory of natural gas occurrence as they combat. The eminent director of the Pennsylvania Geological Survey, in his presidential address at Ann Arbor last year, found occasion to refer to the "*exploded* anticlinal theory of natural gas" as a splendid piece of "dead work," accomplished presumably by the critics already mentioned. It is true that this "dead work" has effectually buried the anticlinal theory as put forth by these critics, for neither the writer, nor anyone else, ever held such a theory; but substantially all that I have ever claimed for it has now been so thoroughly established by the "live work" of the drill, that no geologist, well informed on the subject, will be so rash as to deny the fact.

The gentlemen who have so freely criticised the "anticlinal theory" seem to have stopped reading my first paper on the subject, in *Science* of June 26, 1885, when they came to the *limitations* placed on the theory. On no other hypothesis can I understand the grounds of their opposition. Those who have interest enough in the matter to desire to read my papers on the subject will find all of them in the Natural Gas Supplement of the *American Manufacturer;* and after having done so, they will find that the essence of it all is, that the great supplies of natural gas have accumulated in the rock reservoirs, in regions of disturbance by which the reservoirs in question have been elevated above contiguous areas of the same beds, and in the lower levels of which oil and water may be expected; or, in other words, gas has accumulated where anticlinals, or monoclinals of considerable (but not too great) extent have raised the rocks into arches, and other forms of elevation, and hence, as Prof. Orton says, *structure* is the main element in the occurrence of gas and oil in large quantity.

The theory teaches that it is useless to bore for large gas supplies in a region where there are no considerable, or irregular, dips; and hence its negative value is of great importance, since, in my own experience, but a single failure has been made in condemning such regions; and if any further proof was needed, the larger portion of the State of Ohio bears unmistakable testimony to the negative value of the "anticlinal theory."

But probably the strongest testimony in favor of this theory is the almost universal approval of the practical operators. Many of these, I find, have been guiding their own operations on the same principle for many years, and I very much doubt whether a single operator in Pennsylvania could be induced to drill for gas in a well marked syncline.

The great gas fields of Washington and Grapeville, which the writer located on this theory, are sufficient evidence to most people that its claims are not entirely delusive, or the result of coincidence, as my friend Ashburner would have us believe.

A map, which the writer prepared, to accompany an article on natural gas in the PETROLEUM AGE, has also been a source of trouble to some of my former associates on the Pennsylvania Geological Survey. One in particular says some very unkind things about it: First, that the scale is too small; second, that the anticlinals are incorrectly placed; and, thirdly, that Mr. Ashburner's "great" Kinzua-Emporium Cross-Cut Anticlinal is a myth, as likewise all the others, both "great" and small, which appear on the map in question.

As to the first count in this indictment, I claim exemption from blame, for the original map prepared for this purpose was on a scale of six miles to the inch, instead of ten, as published, and the editors of the AGE will bear witness that I desired the larger scale, which they declined to publish on account of expense.

As to the second count, I would say that the mechanical execution of the map was committed to Messrs. Johnson and Grafton, two young engineers, and experienced draughtsmen, who put the anticlinals on the map from data furnished by the publications of the Pennsylvania Geological Survey, except as stated in my accompanying paper, I took the liberty of correcting some of my own work from later and more detailed observations in the southwestern part of the State, and hence, if any serious error exists in the placing of the anticlinals, it is not the fault of the writer.

With regard to the last count, the writer pleads that he did not invent the term "Cross-Cut Anticlinal," since, in the paper to which reference has been made, he gives due credit to its author and discoverer, Mr. Ashburner. If the black line which has been stereotyped so long on the McKean, Elk, and Cameron county maps of of the Pennsylvania Geological Survey, under the name of "Kinzua-Emporium Cross-Cut Anticlinal," is really a myth, as Mr. Ashburner himself seems now not unwilling to admit, then the writer shall certainly raise no objections to having the term erased from geological nomenclature, as well as from the maps in question; but the structure that the writer described under this term will not be changed by a change of name.

As is well known, the main anticlinals of Western Pennsylvania extend in a northeast and southwest direction, and, as a general rule, the rocks dip down to the southwest along the lines of the anticlinals as well as that of the synclinals; but, in some regions, notably those at Washington and Grapeville, there is such a swelling up of the anticlinals that the rocks *rise* rapidly to the southwest instead of *dipping*, and as some of these *bulges* on the different anticlinals are in a line with each other, I thought it not improbable that they might be connected in origin at least, and hence, having no other name at hand, adopted the one already coined by Mr. Ashburner, for what I supposed represented a similar structure.

But whatever we may call the structure in question, whether a *swell*, *bulge*, or "*hog-back*," as one gentleman terms it, the localities where it occurs are those *par excellence* where we may expect large deposists of natural gas, and when large wells have been obtained in the trend of a syncline the structure is found to be complicated by the presence of such a *bulge*, or else a long and rapid rise from the southwest.

The writer knows that the anticlinal theory, taken in connection with the *limitations*, which are a necessary part of it, is a valuable guide to the geologist in search of natural gas deposits, because he speaks from an experience of more than three years, in which the theory has been put to many practical tests.

OIL REGION CHRONOLOGY.

For October, 1886.

October 1.—Age oil report shows 252 wells completed in September, 36 of which are dry; new production, 13,540 barrels; new rigs, 121; old rigs, 138; wells drilling, 322; total field operations, 581; decrease from last month, 21. Market opened steady at 62½c, vibrated from 62½c to 62⅝c all through the session and closed at 62½c bid. Carrying rates—Bradford, Oil City and Pittsburgh, 55c; New York, 65c. Washington—Barre, No. 5, drops from 90 to 54 barrels an hour; Willets, No. 12, is 55 feet in the sand with a small showing of oil, but no gas; Willets, No. 9, 52 barrels; No. 10, 54; Reed or Bunghole well, 42 barrels an hour. Shannopin—Solar, No. 10, twelve feet in the sand and doing 65 barrels an hour; No. 7, 30 barrels an hour; No. 6, 10 barrels an hour; Marks, 70 barrels an hour; field output, 5250 barrels. Lima—The *Times* reports 33 wells completed in September, with a new production of 2455 barrels, and places the daily yield of the field at 6899 barrels. At Findlay there were 21 producing wells at the close of the month, 7 of which were completed in September. Production 420 barrels. Wheeling, W. Va., celebrates the arrival of natural gas through the mains of the West Virginia Natural Gas Company. Snow falls at Bradford, Alton, Knapp's Creek, Four-Mile, and various points in McKean county, whitening the ground.

October 2.—Market opened at 62½c, with sales at 62⅝c, and gradually advanced to 63⅛c, it afterwards declined to 62¾c and closed at 62⅞c. Washington—Field gauge, 16,514 barrels from 79 wells; Willets, No. 12, in sand and doing 10 barrels a day; No. 9, 1425; No. 10, 1250; Reed & Co., 960; Barre, No. 5, 1400; Davis, No. 2, 1350. Shannopin—Field production 5000 barrels from 29 wells; Marks, 55; Solar, No. 10, 50; Solar, No. 7, 30 barrels an hour. In the afternoon Solar, No. 7, drilled deeper and production increased to 66 barrels an hour.

October 3.—Sunday. Production of Shannopin or Shoustown field reported at 5698 barrels. Raccoon Oil Company's well, on McAllister farm, in sand and flowing 6 to 8 barrels an hour. Weaver, No. 2, Washington, five bits in Gordon sand and makes a small flow.

October 4.—Market opened firm at 63⅛c, advanced to 63⅜c, broke to 63c, rallied to 64c, weakened to 63¾c, then reacted to 64⅝c and closed at 64¼c. Carrying rates—Bradford and Pittsburgh, 55c; Oil City, 60c; New York, 75c. Washington—Cameron, No. 4, twenty feet in the sand and made 93 barrels the first twenty-four hours; Weaver, No. 2, making 90 barrels a day; Willets, No. 9, 47; No. 10, 42; Barre, No. 5, 40, and Reed, on Miller lot, 36 barrels an hour; Gabby doing 20 barrels a day; Willets, No. 8, 216 barrels a day. McAllister well, Shannopin, good for 50 barrels a day and an admitted disappointment.

October 5.—Market opened firm at 64⅝c, advanced to 65c, weakened to 64¾c, reacted to 65¼c, and afterwards went to pieces, closing at 63½c. Washington—Barre, No. 5, 49; Willets, No. 10, 36; No. 9, 44 barrels an hour; Willets, No. 8, 115 barrels in seventeen hours. Field gauge, 14,200 barrels. Shannopin—McAllister well shot with ten quarts and production increased to 19 barrels an hour; Galey well, on Milo Twyford farm, comes in a big gasser; Solar, No. 8, starts at 45 barrels an hour. Boiler at John Gerrard's stave mill, Tionesta, explodes, fatally injuring his son, and seriously hurting George Deiss. Bradford B. B. C. disbands, having played thirty-eight games and won all but seven.

October 6.—Market opened at 63⅝c, advanced to 64⅜c, then to 65⅛c, receded to 64½c, boomed again until 65⅞c was touched and closed at 65¾c. Washington—Reed well strikes lower pay streak and increased to 60 barrels an hour; Weaver, No. 2, nearly through Gordon sand and will make a 100-barrel pumper; Hall, No. 3, through Gordon sand and very light. Associated Producers' No. 3, on Wylie farm, dry in all sands. Shannopin—Solar, Nos. 4 and 11, in sand and showing large; No. 10 is doing 750; No. 8, 600; No. 7, 500; No. 6, 300 barrels a day; McAllister, 134 barrels; Shannon, No. 6, showing for 250 barrels. Wm. Curtin, of Richburg, falls from derrick of drilling well, near Plymouth, O., and is instantly killed. Independent refiners perfect an organization at Cleveland, for the purpose of pooling their interests against the Standard Oil Company.

October 7.—Market opened at 65¾c, highest point of day, broke to 65⅛c, reacted to 65½c, then sagged off to 65c. It firmed up to 65¼c, weakened to 64⅝c, rallied to 65⅛c, fell back to 64⅝c, boomed again to 65½c, broke and closed at 64⅝c. Carrying rates—New York, 80c and 85c; Bradford, Pittsburgh and Oil City, 55c. Washington—Nail City Company's well, on Shrontz, ten bits in inferior sand and showing poorly; Willets, No. 9, 44; No. 10, 31; No. 12, 25, and Barre, No. 5, 46 barrels an hour; Willets, No. 8, made 153 barrels last twenty-four hours; Reed or Bunghole well drops off to 33 barrels an hour; Fair ground well increased to 50 barrels an hour by a twenty quart shot. Shannopin—Solar, No. 11, twenty feet in sand and doing 30 barrels an hour; No. 4, nearly through sand and making 50 barrels an hour.

October 8.—Market opened at 64⅞c, advanced to 65⅛c, settled back to 64¾c, reacted to 65c, then broke to 64⅜c. It firmed up again to 65c, weakened to 64⅝c and closed at 64¾c bid. Washington—Willets, No. 10, in evening increases from 29 to 50 barrels an hour; No. 9, 39 barrels an hour; Thayer, No. 2, shot with a poor response; Barre, Nos. 4 and 6, start flowing by heads; Willets, No. 8, doing 200 barrels a day from first pay streak. Shannopin—Solar, No. 11, 25; No. 4, 38 barrels an hour Field

production, 5900 barrels. Derrick fired at well on J. M. Johnson farm, Canton township, Washington, from flow of gas, and Harry Martin, a driller, seriously burned about the head.

October 9.—Market opened firm at 65⅛c, with sales at 65¼c, sagged off to 65c, advanced to 65¾c and closed at 65½c bid. Washington—Field gange 15,361 barrels from 83 wells. Only two wells in the field doing over 1000 barrels. Willets, No. 12, 1152, and Davis, No. 2, 1300; Barre, No. 4, 120; No. 5, 900; No. 6, 60 barrels; Reed, on Miller, 768 barrels last twenty-four hours. Shannopin—Solar, No. 4, upon being drilled deeper starts up at 65 barrels an hour. George Swartz, a Washington county farmer, robbed of $5000 by bunco men, near Washington. Oscar Rudy fatally burned by explosion of natural gas in Allegheny City. Death of Dr. E. A. Walter, at Tarport, a popular physician of the Bradford field.

October 10.—Sunday. The jury at Smethport fail to agree in the case of W. N. George, charged with stealing oil from the National Transit Company and are discharged. Willets, No. 8, Washington, flowing at 400 barrel rate from top of lower pay streak.

October 11.—Market opened firm at 65¾c, advanced to 65⅞c, sold down to 65c and closed at 65⅛c. Carrying rates 55c and 60c. Washington—Willets, No. 12, made 825 barrels last twenty-four hours; Willets, No. 8, 9 barrels; No. 9, 36, and No. 10, 28 barrels an hour. Production of field 13,631 barrels. Shannopin gauge—Solar, No. 4, 540; Nos. 10 and 11, 1210; No. 7, 300; Marks, 1800 barrels; total for field, 5952 barrels. Oil City decides in Council to have no street cars. Charles O'Donnell, while torpedoing a well at Findlay, killed by premature explosion of nitro glycerine.

October 12.—Market opened at 65¼c, weakened to 64¾c, then advanced to and closed at 65¼c. Carrying rates—Bradford and Oil City, 55c; New York and Pittsburgh, 60c and 65c. Washington—Production, 13,912 barrels; Barre, No. 6, gets second pay streak and increased to 23 barrels an hour; Schrontz well reported through all sands and dry. Robbins well, on Donaldson farm, north of Taylorstown, shut down and mystified.

October 13.—Market opened at 65⅜c, the highest, and closed at 64⅝c, the lowest point of the day. Washington—Amity Oil Company's well, on Price farm, showing oil; Willets, No. 9, 30 barrels an hour; Willets, No. 3, shot yesterday, made 170 barrels first twelve hours. Shannopin—Marks, 45; Solar, No. 12, 40; No. 6, 17; No. 4, 24 barrels an hour. Fire at Independent Oil Company's refinery, at Oil City. A still with 350 barrels of distillate destroyed. Loss, $2000. Death of Hamilton Culbertson, an old time oil producer at Oil City. Aged 62 years.

October 14.—Market opened at 64¾c, advanced to 65¼c, weakened to 64⅜c and closed at 64½c. Carrying rates 55c to 65c. Washington—Craig & Co.'s well, on Fergus farm, makes a flow; Schrontz well full of salt water, with small showing of oil; Willets, No. 8, 197 barrels in twenty-four hours; Barre, No. 5, 27; No. 6, 30 barrels an hour; Cameron, No. 4, doing 300 barrels a day from first pay streak; Amity well, on Price farm, reported filled with oil from Gordon sand. Shannopin—Kirk, No. 2, showing for 200 barrels; Solar, No. 12, starts flowing at 50 barrels an hour, but in evening had dropped off to 18 barrels. Terrible storms throughout the country. Wind blows great gales at Buffalo and damages a large amount of property. Many derricks demolished in the oil fields.

October 15.—Market dull and featureless; opened at 64¾c, advanced to 64⅞c, receded to 64½c and closed at 64½c. Washington—Amity well, on Price farm, runs into salt water; Schrontz well reported drowned out by salt water; Barre, No. 6, increased to 40 barrels an hour; Willets, No. 8, 7; No. 9, 36; No. 10, 15 barrels an hour. Shannopin—Solar, No. 12, good for but 300 barrels; Kirk, No. 2, proves no better than 100 barrels.

October 16.—Market opened firm at 64⅞c, advanced to 65⅛c, broke to 64⅝c, and in the afternoon went up to 65½c, receded to 65¼c and closed at 65⅜c bid. Carrying rates 55c and 60c. Washington—Central Oil Company's well, on Martin farm, begins filling up with oil. Field gauge 13,019 barrels from 86 wells. Twenty-four hour gauges—Barre, No. 4, 100; No. 5, 600; No. 6, 696; Davis, No. 2, 1125; Cameron, No. 4, 211; No. 5, 507; No. 7, 24; Willets, No. 9, 810; Reed, on Miller, 490; Taylorstown well, 80 barrels; Thayer, No. 2, Clark, 339; Wiley, No. 2, through Gordon sand, with 1500 feet of oil in the hole; will make a small producer.

October 17.—Sunday.

October 18.—Market opened strong at 66c, went up to 66⅞c, broke to 65⅝c and closed at 66⅛c. Washington—Smith, No. 5, strikes the pay streak and starts at 50 barrels an hour. Production of field 11,764 barrels. Barre, No. 6, gets second pay streak and increases to 60 barrels an hour; Smith, No. 5, increased to 60 barrels an hour by deeper drilling. Shannopin—Production of field reported at 5000 barrels. Marsh & McDonald, on Scott farm, dry. Fred Hall, aged 15, killed on the N. Y., P. & O. R. R., at Oil City. Two trains collide on the B., B. & K. R. R., near Smethport. No great damage.

October 19.—Market opened at 66c, with a few sales at 65⅞c, advanced to 66⅜c, broke and closed at 65⅞c. Carrying rates—Bradford, 60c to 65c; New York, 65c to 70c; Pittsburgh, 55c; Oil City, 70c. Washington—Central well, on Martin farm, made 383 barrels in eighteen hours; Union, on Dye, started at 50 barrels an hour; Forest, No. 4, Hall, fifteen feet in the sand and makes two flows; Smith, No. 5, 54 barrels an hour. Shoustown—Shannon, No. 7, ten feet in the sand and flowing at 600 barrel rate; Kirk, No. 2, doing 200 barrels. Field gange 5950 barrels. Man hole of tank No. 253, National Transit Company, near Derrick City, blows out and about 500 barrels of oil go to waste.

October 20.—Market opened steady at 66c, remained dull and inactive all day, advanced slowly to 66¼c and closed at 65⅞c. Washington—Production, 13,872 barrels. Union, on Dye, doing 20 barrels an hour; Smith, No. 5, 20; Martin, No. 1, 20; Barre, No. 5, 22, and No. 6, 43 barrels an hour. McKeown, No. 7, strikes first pay streak in "fifty-foot" and begins spraying oil; Willets, No. 7, shot with good results; Union, on Dye lot, made 760 barrels first twenty-four hours; Amity Oil Company's well, on Price, pronounced a failure. Shannopin—Shannon, No. 7, made 500 last twenty-four hours and Marks well 800. Trenton Rock Oil Company get a 700-barrel well on the Douglas farm, Lima. Refined market, New York, advanced to 6¾c. Republican deadlock in the Sixteenth Congressional District broken and H. C. McCormick, of Lycoming, receives the nomination. Democrats name E. L. Keenan, of McKean, for their candidate in the same district.

October 21.—Market opened at 66⅛c, remained between 66c and 66¼c all day and closed at 66c bid. Carrying rates 55c to 65c. Washington—Production 12,653 barrels. Dye well, 15; Willets, No. 9, 30; Barre, No. 5, 14; No. 6, 38; Smith, No. 5, 12; Reed, on Miller, 16 barrels an hour; Coast, No. 3, on Smith, showing small; Amity

well, on Price farm, blowing gas, the oil showing has ceased; McKeown, No. 7, reported dry. Hukill & Co.'s well, on Donley farm, near Mt. Morris, in Greene county, makes a flow. Shannopin—Field gauge 5625 barrels. Marks, No. 2, makes a flow. Gas explosion on Rollins farm, Kinzua Village, seriously burns J. Cornelius, employed by Morse & Collins.

October 22.—Market opened at 66¼c, advanced to 66⅜c, and broke rapidly to 65½c, then to 65c. It reacted to 65¼c, sold off to 64¾c and closed at 65c. Reported that Hukill had struck a 1500-barrel well at Mt. Morris, in Greene county. Washington—Production 12,500 barrels. Dye well made 200 barrels last twenty-four hours; Morgan, No. 3, in sand with light showing; Smith, No. 5, through sand and doing 195 barrels a day.

October 23.—Market opened at 65c, advanced to 65½c, sagged off a few points, and during last hour rallied and closed at 65⅞c. Washington—Production 12,420 barrels from 92 wells. Twenty-four hour gauges—Barre, No. 6, 1056; McGahey, 208; Davis, No. 2, 950; McKeown's seven wells gauge 900 barrels; Morgan, No. 3, 100 barrels; Union, on Dye lot, 175; Willets, No. 9, 690; Coast, No. 3, 50 barrels.

October 24.—Sunday.

October 25.—Market opened at 66¼c, the highest point of the day, and closed at the lowest 65¼c. Carrying rates 50c to 65c. Washington—Barre, No. 4, gets lower pay streak and starts at 100 barrels, but soon dropped to 40 barrels an hour; Willets, No. 9, 28 barrels an hour. Shannopin field production 5279 barrels. James G. Blaine visits the Washington oil field and makes a speech to the students of Washington and Jefferson College. James Jourdan and Thomas Good killed on the West Branch Railroad, near Bradford.

October 26.—Market opened at 65½c, weakened to 64⅞c, firmed up and closed at 65½c. Washington—Barre, No. 4, 40, and No. 6, 42 barrels an hour. Robbins well, on Donaldson farm, two miles north of Taylorstown, a big gasser with no show of oil.

October 27.—Market opened at 65⅝c, weakened to 65¼c, reacted to 65⅜c and closed at 65¼c. Washington—Barre, No. 4, 37 barrels; No. 5, 12; No. 6, 42 barrels an hour. Taylorstown well packed and doing 90 barrels a day. Burning of the Gardner & Borland block, Oil City. Shield's restaurant and Moon's photograph gallery badly damaged. Loss, $20,000.

October 28.—Market opened at 65⅜c, advanced to 66¼c and closed at 66⅛c. Washington—McKeown, No. 7, shot and starts up at 150 barrels; Willets, No. 12, shot and responds with 50 barrels an hour. Lima runs 4312 barrels for to-day.

October 29.—Market opened firm at 66¼c, weakened rapidly to 65¾c, firmed up a fraction, broke and closed at 65⅛c. Washington—Gauge 10,750 barrels. Willets, No. 12, drops off to 12 barrels an hour. Hukill well, at Mt. Morris, Greene county, makes several flows.

October 30.—Market opened at 65¼c, advanced slowly to 66¼c and closed at 66⅛c. Washington—Fergus, No. 1, in sand and doing 15 barrels a day; Smith, No. 5, making 100 barrels a day while fishing in top of the sand. Field gauge 11,118 barrels from 92 wells. An employe of the Union Oil Company, named McElphatrick, instantly killed by the collapse of a derrick on the Barse tract, Bradford field. Delos Jack, a boy of 15, blown to pieces while making nitro-glycerine at his father's factory, near Rixford.

October 31.—Sunday. Titusville Chemical Works, Titusville, destroyed by fire. Loss, $20,000.

ON THE RELATIONS OF GAS TO OIL.

FROM GEOLOGICAL SURVEY FOR 1885—BY JOHN F. CARLL.

GAS and oil are so intimately related that an oil field must necessarily be a gas field. From one end of the oil belt to the other, gas has been found in larger or smaller quantities in every oil well drilled. But the conditions under which it exists are quite variable. Sometimes large flows issue from sandstones lying above the oil producing rocks, sometimes from the oil sand and with the oil, and in other cases it may be from sands below the oil horizons. "Gas streaks," as they are properly called, or areas where the rock contains more gas than oil, are common throughout the oil regions, skirting the edges of good territory in some places, or streaking the central portions of it in others.

It does not follow, however, that every gas well must produce oil, for even within defined oil fields there have been gas wells that made no oil beyond a slight condensation in the delivery pipes; and elsewhere gas producing rocks are sometimes absolutely barren of oil in the gas horizons.

To note all the points where gas has been found outside of the oil belt would be to locate nearly every wildcat well in the country, for they all have produced some gas, and many of them in valuable quantities, if it could have been utilized in the neighborhood.

At Shingle House, in Potter county, the gas is of sufficient importance to be piped to consumer. Several other places in the northwestern portion of the county have furnished gas wells. In the southwestern townships six or eight deep wells have been drilled which give very little encouragement to continue prospecting there for either gas or oil. East of Potter county I am not aware that any remarkable gas wells have been found.

The Allegany oil district has produced an immense flow of gas which is still being utilized throughout the field, and is likewise piped to Olean, Cuba, Friendship and Wellsville.

The Bradford district has also been very prolific in gas, but unrestricted consumption and waste have very materially reduced its pressure and volume. At first the town of Bradford had an ample supply from wells near the city and on the northwesterly edge of the oil field; but this failing, pipes were run to the Rixford gas pool, which reinforced the supply for some time. Later, however, it became necessary to lay a new line, of over twenty miles, to connect with the Wilcox gas pool near the southerly line of McKean county, where there is a large deposit, capable, no doubt, of responding to all demands that can be made upon it for many years to come. The Wilcox wells (R, p. 148, etc., and I4, p. 104, etc.) have also produced some oil in what is considered to be the equivalent of the Bradford sand; but not enough to make them remunerative as oil wells. The oil sand lies here about twenty feet below ocean level, and more than 400 feet lower than at Bradford.

The Sargeant pool, in the same horizon as the Wilcox, is noted for its Geyser well, described in Report R, p. 244, etc. Its gas was wasted and the well is now spoiled by water.

The Watson well at Johnsonburg Station, in Elk county, ejects a large volume of gas from a brown sand at 1660 feet, and indicates the presence of a good pool in that vicinity. The gas was allowed to waste two or three years, but is now being used for heating and

lighting purposes. A well near Grant & Horton's tannery, at Ridgway, also flowed some gas at 905 feet, but was not materially improved by deeper drilling.

Wells at Kane City, supplying the town with heat and light, and at Wetmore, demonstrate that there is an abundance of gas to be had there by drilling for it, and even in this region of forests it is found cheaper to use gas than wood for fuel.

The Roy & Archer gas pool, in the northeastern corner of Elk county, has three wells, one of which furnishes more than enough gas fuel to run a large establishment for making wood acid and charcoal from the beech, maple and other hard woods which abound in that locality. This pool is remarkable from the fact that the gas (and the wells, also, had favorable indications of oil) apparently comes from a lower geological horizon than any other known to be productive in the Pennsylvania oil regions, from a brown sand which lies stratigraphically more than 1800 feet below the horizon of the Murraysville, Westmoreland county, gas sand.

The great Sheffield gas pool extending across the Warren-McKean county line is one of the largest and most prolific known in the country. It was discovered in 1875 by the Hague or Sheffield well, which is still flowing strongly, the gas being piped to Sheffield. This well has a remarkable history on account of the troubles encountered by the formation of ice in the hole.*

A number of new wells have been sunk in this district during the last two years, and the product is now piped to Warren and to Jamestown, New York, a distance of thirty-two miles.

At Barnesville, or old Sheffield, a large gas well was obtained in 1879 in a rock one hundred feet or more above the Hague well sand. (See I4, p. 24.) This has been utilized for a long time in making lamp-black.

The Cornen gas pool, lying between Clarendon and Cherry Grove, furnishes strong and lasting wells. The gas is piped to Clarendon and Warren.

This region abounds in gas, both in and out of the oil pools, and, as it is not confined to any one particular horizon, an unlimited supply for all purposes to which it can possibly be applied seems to be assured for many years.

In the city of Erie, and, in fact, almost anywhere along the Lake Shore in Pennsylvania, gas wells are obtained by drilling from 600 to 800 feet, but they are of low pressure and small volume as compared with wells in the oil regions. The gas seems to be diffused through beds of interstratified sandstone and sandy shale, capable of storing large quantities, but, having little pressure, it issues slowly and flows with remarkable constancy a long time. The Erie wells have been referred to in Report L, page 168, etc., and the same is copied in Report I4, p. 121, etc. Since these publications were issued many wells have been drilled, but they reveal nothing new that requires to be specially mentioned here.

In the Venango district, a great many large gas wells have been found, most of them in early times, when they were considered of little or no value. Abandoned, set on fire and left to care for themselves, they, in a few years, either died from exhaustion or were drowned by accumulations of water in the hole. Old "burning well" sites can be pointed out in every part of this country.

One well, however, the Newton, located in Oil Creek township, Crawford county, about five and one-half miles northeast of Titusville, (I2, p. 198,) was put to practical use as early as 1872, by the laying of a gas main to connect it with the city. This seems to have been the first attempt at piping gas any considerable distance for fuel and light. Other wells have since been put down in the Newton neighborhood, but the original supply of gas could never be increased or even sustained, and now the yield of the pool barely meets the requirements of a few families.

The Venango group has been so thoroughly ventilated by oil wells in Northern Venango, Crawford and Warren counties that no large, permanent flows of gas can now be expected from it, and hitherto no indications of prolific gas deposits at lower geological levels have been noticed in any of the deep wells drilled northwest of the Allegheny river. But south and east of the river the group has not been so completely relieved, although an enormous quantity of gas has been wasted, as at Gas City, East Sandy, (see L, p. 166 and p. 177,) and other places. The possible gas supply of this section is also immeasurably increased by the recent discovery of a rich deposit in a sand belonging to the Warren group, and lying about 900 feet below the Venango group. The first notice of this sand was given early in 1885, by a well on the Speechley farm, in Cranberry township, and now several wells in the vicinity are yielding largely, the product being piped to Oil City, thence up Oil creek to Titusville and the towns along the route. It is also sent southerly in sufficient quantity to satisfy the wants of those engaged in oil developments at Cogley Run and Red Valley.

The old Butler and Clarion oil fields also had many extraordinary gas wells within their limits. Some of the most noted, the Fairview, Burns and Delamater, are referred to in Report L, appendices B, C, D and E, and the Thompson, at Carbon Centre, in V, page 170.

Wells drilled east of the Clarion belt show considerable gas in all cases, and no doubt good deposits will yet be discovered there. For the want of precise information, I am unable to locate more than two gas spots in this part of Clarion county—one on Cherry run, in Toby township, where a very strong gas well was obtained in 1878 (I3, p. 412) which burned for several years; the other near Strattonville, in Clarion township.

At Brookville, Jefferson county, two wells have been drilled, but the gas flow being insufficient for the purposes required, another will shortly be sunk.

At Canoe creek, in North Mahoning township, Indiana county, the Snyder well struck strong gas in 1883, which is piped about five miles to Punxsutawney. Reported depth to gas sand 2615 feet. "Sand sixty-five feet thick, black, fine and hard." This sand evidently lies far below the gas horizons of the Allegheny river region.

* See I, p. 193, and I, p. 378. Another curious freak not mentioned in the pages referred to was this: After the two-inch tubing had been put in to test the well for oil, it was partly filled with water to buoy in the sucker rods while being inserted, and lighten the labor of putting them in. When about two-thirds of the rods had been lowered, some obstruction was met, and, after ineffectual attempts to force them further, it was concluded that the tubing was imperfect and would have to be withdrawn. Preparations were made to pull the rods, but, on attempting to run them up, they were found to be immovable. Hence, rods and tubing had to be taken out together, a very difficut and undesirable job, as any one knows who has been forced to undertake it. When the lower joints of sacker rods and working valves were reached they were seen to be solidly frozen in the tubing. The water at and near the point where gas came into the well had frozen, the ice-core stopped the rods in their downward passage, and, while endeavoring to force the obstruction, new ice set around the valve and rods and held them firmly. These phenomena were considered remarkable at the time, but since then several wells in the Cooper district have been in like manner seriously embarrassed by ice both in drilling and sand pumping.

West of the Venango and Butler belts gas deposits are of frequent occurrence, and in the northwestern part of Butler county the first oil sand is eminently a gas producing rock. Near Harrisville and Centreville, in Mercer and Slippery Rock townships, no well fails to find gas. The Wolf Creek and McMurray's Mill wells, described in Report V, pages 100 and 132, would no doubt have been profitable investments if there had been any market for their gas. But only within the last year have plans been perfected for making these gas deposits available A pipe line is now being laid from the Centreville district to New Castle, and several wells have been drilled which give assurance of ample supplies. In the Harrisville district large tracts of land have been leased by the Natural Gas Company, of Youngstown, O. One good well has been completed there, and after further development it is proposed to pipe the product about thirty miles to Youngstown. The pressure and volume of gas in the wells on this range of territory do not seem to be as great as in the deeper wells at the south, but the gas sand is of good quality and thickness and underlies an extensive area; hence it may be expected to yield in the aggregate quite as much gas as some of the more pretentious fields.

Central Armstrong county abounds in gas, as shown by numerous wells. A test for oil at the mouth of Pine creek, in 1877, (I3, p. 409,) found only gas and was abandoned. Two or three wells, just north of Kittanning, furnish the town with heat and light, and others three miles west, in Franklin township, send in plenty of gas fuel to the iron manufacturers. When these pools shall fail, no doubt others will be found within easy reach, for no town in the gas regions appears to be more favorably located than Kittanning for obtaining convenient and lasting supplies.

When Report L was being prepared in the fall of 1875, the gas wells at Lardintown, Saxon Station, Freeport, Leechburg and Apollo were in their prime, and beyond them to the southwest no promising deposits of gas were known. The characteristics of the wells then producing, the initial experiments at piping gas long distances, and its application to iron working are so fully discussed in appendices B, C, D and E that they require no further notice here. The pipe line from Lardintown is still working successfully, but, for a year or more, the old Harvey well has not contributed any gas to it, having gradually weakened in power and succumbed to accumulations of water. Twelve additional wells have been drilled, some obtaining gas in the "first sand" horizon and some about 500 feet lower, in the "fourth sand." Seven of these have been abandoned, leaving five connected with the pipe, and these altogether are probably not furnishing as large a quantity of gas as the Harvey well alone produced ten years ago.

The Saxon Station well has been utilized for making lamp-black, and, standing alone, still flows with considerable volume.

At Freeport and Leechburg, ten or twelve wells have been put down, but all are of moderate capacity. The old Leechburg well still produces some gas. The Apollo wells are all small.

Three miles southwesterly from Apollo, the Pine Run well, in Washington township, failing to get either gas or water in the Murraysville-Leechburg sand, drilled on about 125 feet below it to another sand, and got a very good flow of gas. This was in January last, and since then, several wells at Apollo and Leechburg have been deepened, in some cases with improvement, but not to the extent anticipated.

About three miles southeast of Pine Run well is the old Beaver Valley well, completed in 1878, a few days before the first well (Haymaker No. 1) at Murraysville, nine miles southwest, and claimed by Mr. Mehaffey, one of its owners, to have been quite as large a gasser. As no oil was obtained, the well was abandoned without casing. The derrick was afterwards burnt, but the roaring gas and rising column of fire and water still marked the spot. For eight years this struggle between gas and water has gone on, and still the gas maintains sufficient power to lift the column spasmodically and to sustain a continuous gas flow, which makes a flame about fifteen feet high. This well is not far from the axis of the Murraysville-Roaring run anticlinal, on which, about two miles and a half to the northeast, and exactly in the mouth of Roaring run, a deep well was sunk in the spring of 1885, which found no gas of value.

Here we have a good illustration of the uncertainties that must ever attend all operations for oil and gas. A large gas well (Beaver valley) on an anticlinal, in the Murraysville-Leechburg sand; a good gas well (Pine run) in a synclinal, where the Freeport upper coal is found 210 feet lower than at Beaver Valley well, but in a sand 125 feet deeper than the Leechburg sand; a dry hole on the anticlinal with no available gas in either of the gas horizons of the other wells, and all within a radius of less than two miles.

The Tarentum or Bull Creek gas field, in the northwestern townships of Allegheny county, was first tapped by the well of Graff, Bennett & Co., in June, 1878, (I3, p. 405,) but the value of the find was not appreciated until several years later, when, after three or four unsuccessful wells had been sunk near it and to the east, Messrs. Ford and Nelson ventured about a mile northwardly up Bull creek and brought in a large gas well in January, 1883, which started a development that has resulted in defining one of the most prolific and important gas pools of the country. Over twenty wells have been drilled by companies who own and operate their own wells and pipe lines, and the supply is ample for the town of Tarentum, the large Plate Glass Works at Creighton, the Pennsylvania Salt Manufacturing Company at Natrona, the Paper Mills of Godfrey & Clark, and the Bottling Works of Richards & Hartley. The Philadelphia Company is also piping large quantities to Pittsburgh, (about twenty-two miles,) and the Hite Gas Company, having laid a ten-inch main to the city limits and being debarred from entering, are forced to allow their product to waste.

The Tarentum district is the most northerly one contributing to Pittsburgh. The others are Murraysville, on the east, in the westerly edge of Westmoreland county; Homewood, partly within the city limits, and Hickory, on the west, in Mount Pleasant and Cross Creek townships, Washington county. Cannonsburg, Washington county, and Montour, Allegheny county, will soon be added.

The facts seems to be clearly established that all of these derive their gases from the Venango-Butler group or from sandstones above it; Murraysville from the representative of the first sand; Homewood and Cannonsburg from a higher horizon; Hickory from a lower—and also Jones and Laughlins' wells in the city and Homestead well six or eight miles up the Monongahela. Hickory and Cannonsburg also produce largely from the Homewood sandstone. These specific identifications, however. are provisional, for, as previously explained, the facts at command are as yet too meager to base positive deductions upon.

Murraysville may justly claim to be the "phenomenal" gas field of the country. On a narrow strip of territory, about five miles long, over thirty wells have been drilled—the most of them within the last year—without a single failure. The first well (Haymaker No. 1) was completed in 1878, and for five years its product, equivalent in heating power, probably, to 1000 tons of coal per day, was allowed to waste. In 1883, other wells were drilled and a pipe line laid to East Liberty, Pittsburgh, to which this well was attached in November. In the same year another line was laid from the Lyons run wells (a part of the Murraysville belt) to the Edgar Thompson Steel Works, near Braddock. Since then six or eight other mains of different capacities have been run from the district to Pittsburgh and McKeesport, and still much gas is going to waste. At present the Philadelphia Company controls all the outlets, except one belonging to the People's Natural Gas Company, whose main is laid to the city limits and awaits permission to enter.

It would be interesting to know what effect the escape of so much gas has had upon the normal pressure in the Murraysville pool; but none of the wells here have been properly equipped for testing pressures. To confine the gas in these wells even to a pressure of 350 to 400 pounds to the square inch would be a hazardous undertaking, for it might lift the casing and greatly damage the well. In the northern gas fields, wells are cased and packed in such a manner that they can be controlled without danger. When the product of a well is not needed for a time, a gate is closed and the flow stopped. In the Wilcox district the pressure runs up to about 575 pounds to the square inch and then remains stationary. In the Allegany, New York, district it checks at about 400 pounds; while in some parts of Butler county it does not venture above 250 pounds.

The Murraysville wells are run under a safety valve pressure of from 150 to 200 pounds, as circumstances may require; and if the supply at that pressure is in excess of the demands of the delivery pipes, a waste lead allows the surplus to escape and burn at the wells. In this way hundreds of millions of cubic feet of gas have been wantonly consumed, when it should have been husbanded for future use. The popular fallacy that these southern gas fields are inexhaustible is responsible to a great degree for this improvident waste. With proper appliances the wells here could be controlled as readily as in any other district, even allowing that the pressure might run up to 1200 pounds to the square inch, as some claim it is capable of doing. And until this is done we shall never know just what effect the multiplication of wells is having upon the resources of the pool—unless some remarkable decrease of production becomes plainly apparent—for all that now can be learned is that, "the wells do not interfere with each other and are yielding as largely to-day as when first opened."

At Homewood, Twenty-first ward, Pittsburgh, a very strong gas well (Westinghouse No. 1) was struck in May, 1884. It gave promise of an immense yield; but some water accompanied the gas, and fearing it might eventually prove detrimental, efforts were made to case it off. While experimenting to this end the volume of gas decreased and ever since the well seems to have made a very unsatisfactory record. Fourteen holes have been drilled in the neighborhood of this well on the popular northeast southwest line, two of which are outside the city limits. All had a show of gas for a while, but only three or four of the most northeasterly ones appear to be profitable producers. One of the partial failures has been deepened, but how much and with what results cannot be learned.

The Hickory district was opened by the McGuigan well in March, 1882. The gas had extraordinary power and volume, but being so far from market, was allowed to waste for a year or more, when a six-inch main was laid to Birmingham, about twenty-two miles. In 1884 two other large wells were struck in the immediate vicinity of Hickory postoffice; but they are only about 1060 feet deep, while the McGuigan is 2237 feet. Hence there are two important gas horizons here, one probably in the Homewood sandstone, the other well down towards the bottom of the Venango-Butler group. Still later, two more wells were drilled and continued down to the McGuigan sand. The supply of gas from these four wells is enormous and a pipe line has been laid to convey it to Pittsburgh.

The Cannonsburg field, as before stated, produces gas from two horizons. Three or four wells have been drilled, others are under way, and a pipe line will soon connect it with the city.

At Washington five gas wells have been drilled. They are fairly prolific, but altogether furnish hardly sufficient gas to supply the town.

The Bridgewater field, in Beaver county, gives promise of great capacity and endurance. It was opened in the spring of 1884. Phillipsburg, Beaver, Rochester, New Brighton and Beaver Falls, are being supplied with gas from it, and it seems capable of responding to any other demands that may be made upon it.

The old Fetterman well, spotted above Beaver Falls, and referred to in Report I4, page 142, seems to have been a large gas producer in 1863, but wells since drilled in that vicinity have not proved very prolific.

Two wells at Bellevernon, Fayette county, are yielding a moderate flow of gas from a sand lying considerably below the Pittsburgh salt water sand. Its exact horizon cannot be stated until the records of the wells are obtained.

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78⅜	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅝	69⅞
June	68⅜	100¼	81	54½	117¼	68¾	82¼	67
July	69⅞	101¼	76⅛	57⅝	108	63½	96⅜	66
August	67¼	0¾	78⅔	58⅔	108⅔	81 1-5	100⅔	62
September	69¼	9 ½	92¼	71½	112½	78	100¾	63⅜
October	88⅛	96¾	92¾	93⅝	111⅛	71	105½	65⅛
November	105⅜	91¼	82⅓	114⅜	114 4-5	72⅛	104⅜	-----
December	113¼	92⅜	83¾	95⅛	114⅓	74⅜	89⅝	-----

A CAREFUL estimate of the gas business in Pittsburgh places the total number of connections now made at 17,000. The Philadelphia Company have about 8000 connections, the Chartiers 4000, the Allegheny Heating Company 1200, the People's Gas Company 1000, the Pennsylvania Gas Company 300, and the Washington 100. These estimates are as nearly correct as it is possible to get. From this business the companies enumerated derive a revenue of nearly $2,500,000, of which the Philadelphia Company gets over $1,100,000, and the Chartiers Valley Gas Company about $350,000.

BLUE print maps of the Ohio oil fields to be had at the AGE office.

American Consular Reports on Russian Petroleum.

The reports from Consuls of the United States, published by order of Congress, are so exhaustive on the question of petroleum that we are tempted to quote the essence of several. Petroleum was first produced in Russia in 1832, seventeen years before Colonel Drake made his famous discoveries in Pennsylvania. The entire produce of all the Russian wells up to 1885 was 465,954,964 poods or 2,329,774,820 gallons, equal to 55,470,830 barrels, while the American up to 1885 was 269,382,993 barrels, of which 2,635,696 were exported to Russia between the years 1864 and 1879. The average depth of Russian oil wells was:—1873 to 1878, from 150 to 180 feet; in 1878, 258 feet; in 1879, 324 feet; in 1880, 336 feet; in 1881, 366 feet; in 1882-3, 414 feet; in 1884, 450 feet; and in 1885, 462 feet. The three districts where petroleum is worked are the Balhane, Sabunche and Shytan Bazar (Devil's market). The greatest flow of oil is in depth ranging from 300 to 420 feet. The strata of ground is as follows: In 84 feet depth partly clay, with sand and stone; in 114 feet, stone and blue clay; in 120 feet, oil sand; in 126 feet, stone, then clay and sand; from 132 to 180 feet, oil sand; from 186 to 300 feet, in some bore holes quicksand, others clay and sandstone; in 306 feet, veins of oil sand; and lastly, in from 318 to 450 feet oil sand only. A knowledge of this strata is said to be important with reference to borings in any other part of the world. The entire number of bore holes or wells in the Russian province was 582, and these produced in 1885 525,000,000 gallons crude, which at 42 gallons per barrel is equal to 12,500,000 barrels. The Russian refiners' interest at Baku has found itself embarrassed by inadequate railway transportation to the Black Sea, traceable not alone to insufficiency of tank wagons, but restricted possibility of transport over the Suramme Pass, about 3100 feet above the level of the sea. It was proposed that the Russian Government should lay down a trunk pipe line from Baku to Batoum, the distance from the oil fields to the port of shipment being 650 miles. This method of running the oil through an underground tube has been abandoned or indefinitely postponed in consequence of the competition it would create with the railway. A tunnel may, perhaps, be driven through Suramme Pass, and the link of railway completed, after which tram lines to the wells would bring the full tanks and take the empty ones away. The cost of the pipe line, it is estimated, would reach £1,600,000. Doubts have been raised as to whether a tube of 650 miles in length could be depended upon to run the oil continuously. The wells are not the property of one company, and, therefore, to enable a consignment to flow from the oil region to the Black Sea, there should be no stoppage. With a yield of only about 30 per cent. of refined petroleum, as compared with a yield of 70 to 75 per cent. from the American crude, there is remaining an enormous residual product, very little of which can be profitably marketed. At Baku the accumulated stores above ground are exceedingly limited, whereas in the United States the reserve stock is about 35,000,000 barrels. As regards the opinion expressed that the economic domestic practices of the Tartar, Persian and Armenian refiners would make them formidable competitors to the more extravagant American refiners, no belief in this alleged disparity exists. Russia has, however, the benefit of advertised foreign markets, as the Americans have prepared the way for petroleum in every direction. To force American petroleum in all markets, a monstrous deal of pushing was indispensable. Not only had the oil to be introduced, but it was necessary to make lamps that would burn it. The exports of oil from the province of Baku, in which the wells are situated, to the Caspian seaports in 1885 were:

	Gallons.
Crude oil to Russia	10,634,200
Crude oil to Persia	600,000
Residue to Russia	143,405,740
Residue to Persia	750,000
Refined oil to Russia	95,812,860
Refined oil to Persia	400,000
Lubricating oil to Russia	4,291,525

The most serious competitor to the American product is the lubricating oil. Petroleum is the best known lubricator, and the Americans had a monopoly of the market. The United States Consul at Cologne says that the American lubricating oil is being gradually driven out of the German market, but the attempt to supercede the American oil for other purposes has failed. The Russian lubricating oil is sent from Baku to the Caspian Sea, and from Astrachan up the Volga, and after being refined at Moscow, Riga and Petersburg is sent up the Rhine or partly by rail. Considering that the Volga, the canals, and the Baltic Sea are open only for about five months, it is evident that the American transit has better facilities for moving the oil. American oil is also lighter than the Russian, inasmuch as it is specifically lighter, and is preferred as a cylinder oil for heavy machines. The illuminating power of Russian oil is very good if the receivers in the lamps are not too deep. Russian petroleum is exported from Batoum to Fiume, where there are extensive refineries. The petroleum received at Fiume is not wholly crude; and the Austrian Government levied a duty on it as "refined oil." The Hungarians objected to this tax, and urged that the refineries would have to be closed if partially refined petroleum was taxed as pure. A compromise was arrived at, and the petroleum was charged 3 florins in gold per 100 kilograms, and the duty on American crude 1·42 florins gold per 100 kilograms. This change is not to take effect before December 1, 1887, but is then to remain in force for ten years. Up to this last named period the duty on crude petroleum of 8·30 degrees specific gravity or less, American and Russian, is 1 florin 10 kreutzens in gold, or 53 cents per 100 kilograms, equal to 221½ pounds English. A syndicate has been formed to erect refining works at Trieste, and the producers of Galician petroleum are clamoring for the paternal assistance of the Austrian Government. They ask for subsidies to build improved refineries in order to turn out a less smoky illuminating fluid. The mineral oil industry in Austrian Galicia employs 8223 registered and 4000 unregistered laborers. The petroleum does not rise to the surface, nor is it pumped up, but is obtained in the same laborious manner as mining for minerals. The American Consul describes the petroleum miners and laborers as slaves. They receive from 50 kreutzens to 1 florin for twelve hours' work, 10 per cent. of which goes to the cashier, who farms the labor, and the balance to the same person for board and lodging. They are exposed to all sorts of disease, and their demoralization is general. The negroes in America were treated with greater respect, and were more humanely governed.—*Liverpool Journal of Commerce.*

A RUSSIAN PETROLEUM PIPE LINE.

In the London *Pall Mall Gazette* of October 8 Mr. Charles Marvin, who has written much concerning the Russian petroleum wells and refineries, has the following concerning the long contemplated project of a pipe line across the Caucasus, whereby petroleum is to be carried to the shore of the Black sea at very low cost:

The Russian Government has completed at last the

scheme for the petroleum pipe line from Baku to the Black sea, a distance of nearly 600 miles, and as it is willing that two-thirds of the pipe line, or 400 miles of iron pipes, should be constructed by the country acquiring the concession, the possibility of securing such a great and lucrative order should direct the attention of England to the enterprise. Already four foreign competitors are in the field, among them being the Paris Rothschilds and the Belgian firm of Cockerill & Co., supported by a group of Amsterdam bankers; but the Russian Government is anxious to secure "the lowest tender," and thus the competition will remain open a little longer. The capital required for the scheme is £2,000,000, and the undertaking, therefore, would need a powerful syndicate to carry it out. Whether, in the present condition of the political atmosphere, English capitalists would care to sink £2,000,000 in Trans-Caucasia is a moot point.

For at least the last ten years there has been a talk of laying down a pipe line from the oil fields at Baku to some point on the Black sea. The original obstacle to the scheme was the undeveloped condition of the industry, and the advocacy of the undertaking by mere concession mongers; and afterward the completion of the railway from Baku to Batoum put a temporary extinguisher on all projects presented to the Government. The interest on the capital of this railway being guaranteed by the State, the reasons dictating such a policy can be readily appreciated. Last year, however, the traffic on the line, although only two years old, was already too large for its resources, and the Government decided upon the construction of an oleoduct. The Minister of Crown Domains, Senator Ostrovsky, and the Minister of Railways, General Possiet, both visited Trans-Caucasia, and on their return the Minister of Finance shared with them several conferences, resulting in the formation of a commission, representing the three departments, to draw up the terms of a concession. When this was ready Gospodin Ragosine, a well-known exploiteur of petroleum, was dispatched to Baku to see whether a combination could be formed by the various native petroleum firms to lay down the line. Ragosine's mission came to nothing. Excluding Nobel Brothers, there were no rich firms to provide the necessary capital, and the Government perforce was compelled to consent to the concession being placed in foreign hands. The line must start from Baku, but the terminal point on the Black sea is left open for the present. In all probability Poti, and not Batoum, will be insisted upon. The pipe must be large enough to allow of the passage of 160,000,000 gallons of oil a year, and the stoppages for repairs must not exceed on an average one a month, or last longer than three days. As soon as the traffic reaches 90 per cent. of the full working power of the line, the company must proceed to lay down a second oleoduct, and have it ready for traffic in two years. The time allowed for laying down the first pipe line is three years. The concession will last twenty years, but no guarantee will be given by the State, nor will the company be allowed to own oil wells and refineries. Where the pipe line traverses crown estates the land will be given the company for nothing, and elsewhere it will enjoy the same privileges as railway corporations. One-third of the pipes must be obtained in Russia, but this clause will not be insisted upon should the supply be inadequate. The tariff to be charged for the oil pumped through the line is 10 or 11 copecks the pood, or 12s. or 13s. a ton. This will amount to a little more than a half penny (1c.) a gallon.

The engineering obstacles to the enterprise are of a very trifling character, with the exception of the passage of the pipe line over the Lesser Caucasus. The ascent to the Suram Pass, 3200 feet above the sea level, is somewhat sharp, but an extra number of powerful pumping stations will overcome this obstacle, while on the Batoum side of the range fewer stations will be needed, owing to the force with which the oil will flow by its own gravity, to the Black sea coast. There is, therefore, no reason for fearing that the pipe line will not be laid down in three years' time; perhaps considerably earlier. As for the distance, it is a mere trifle compared with the American pipe lines, which collectively extend to a length of 9000 miles. When it is open for traffic the export of Russian petroleum via the Black sea will increase tenfold. At present tens of millions of gallons of refined petroleum can be had at Baku for a penny a gallon. The projected pipe line will run it across to the Black sea for another half penny, and for very little more than that sum it will be possible to bring it to London in tank steamers. In this manner, whether England makes the pipe line or not, she will derive a substantial benefit by its completion.

Charter Nullified at Fostoria, Ohio.

Something over a year ago the Fostoria Natural Gas Company was formed and duly incorporated, the object being to supply the city with natural gas for heating and illuminating purposes. A franchise was given the company by the Council, allowing them the privilege of piping the streets. Two wells were sunk within the city limits, but only a meager supply of gas being found the project was abandoned. Several months later gas was found in immense quantities a few miles west of the city. A company was formed composed of Cleveland, Buffalo, Pittsburgh and other Eastern capitalists, backed by the Standard Oil Company. Ex-Governor Foster, also has a large interest. The new company is known as the Northwestern Ohio Natural Gas Company. When the company issued a schedule of rates a majority of the people thought they were exorbitant, at least higher than heating with coal or wood, the price for gas for an ordinary cook stove being placed at $28 per year. At the meeting of the Council October 27, the matter was warmly discussed and resulted in declaring null and void the franchise given to the Fostoria Natural Gas Company. The Northwestern Company purchased all the interests of the Fostoria Company, together with their franchise, as they thought, but the Council declares it is not a merchantable article. The Council demands lower prices or they will not be allowed to enter the city.

THE St. Paul Heat and Power Company, which was organized at St. Paul, Minnesota, some two months ago, with a capital stock of $500,000, has been granted the right to lay mains in the streets of St. Paul, and a similar proposition is pending in the Minneapolis Council. The company has secured control of 640 acres of land near the State fair grounds. The machinery, consisting of a rig, a derrick, engine and boiler, and all the necessary drills, will be on the ground, and the boring will commence at once. It is expected that the gas will be reached at least at 3000 feet.

THE Standard Oil Company has been incorporated at Louisville, Ky., with a capital stock of $600,000, to manufacture, refine and deal in petroleum and its products. W. H. Tilford, of New York, is President; G. H. Vilas, Vice-President; W. T. Jordan, Secretary, and L. T. Rosengarten, Treasurer.

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	October, 1886. Wells.	Prod'n.	Dry.	September, 1886. Wells.	Prod'n.	Dry.
Scio	2	5	1	0	0	0
Alma	4	15	0	1	2	0
Wirt	5	12	3	3	15	1
Bolivar	2	12	0	0	0	0
Clarksville	6	54	0	5	37	0
Genesee	1	0	1	0	0	0
Miscellaneous	0	0	0	0	0	0
Total	20	98	5	9	54	1

BRADFORD FIELD.

Division of Field.	October, 1886. Wells.	Prod'n.	Dry.	September, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	8	35	1	5	27	1
Kendall Creek	1	6	0	3	18	0
Foster Brook	2	11	0	3	17	0
Knapp's Creek	0	0	0	0	0	0
Four Mile	0	0	0	2	16	0
Indian & Meeks Creeks	5	29	0	5	40	0
Cole Creek	0	0	0	3	34	0
Kinzua	2	18	0	1	8	0
Miscellaneous	1	0	1	0	0	0
Total	19	99	2	22	160	1

WARREN AND FOREST.

District.	October, 1886. Wells.	Prod'n.	Dry.	September, 1886. Wells.	Prod'n.	Dry.
Glade	5	31	0	4	30	0
Clarendon	9	47	0	14	73	1
Tiona	8	36	1	8	50	0
Cooper	1	0	1	0	0	0
Balltown	2	25	0	4	40	2
Kane	30	565	1	29	646	0
Grand Valley	34	300	1	33	331	1
Miscellaneous	14	6	12	8	4	7
Total	103	1010	16	99	1174	11

LOWER COUNTRY.

District.	October, 1886. Wells.	Prod'n.	Dry.	September, 1886. Wells.	Prod'n.	Dry.
Venango	48	425	12	40	405	11
Clarion	19	96	9	14	125	3
Butler and Armstrong	31	786	6	37	1059	7
Washington	19	2485	5	20	7710	2
Shoustown, Etc	20	1575	7	12	2853	0
Total	137	5367	39	123	12152	23

GRAND SUMMARY.

District.	October, 1886. Wells.	Prod'n.	Dry.	September, 1886. Wells.	Prod'n.	Dry.
Allegany	20	98	5	9	54	1
Bradford	19	99	2	22	160	1
Warren and Forest	103	1010	16	99	1174	11
Lower Field	137	5367	39	123	12152	23
Total October	279	6574	62	253	13540	36
Total September	253	13540	36			
Difference	26	6966	26			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	Oct. 31, 1886. New Rigs	Old Rigs	Drilling	Total	Sept. 30, 1886. New Rigs	Old Rigs	Drilling	Total
Scio	0	4	0	4	0	4	0	4
Alma	0	5	0	5	1	6	1	8
Wirt	4	9	4	17	3	9	5	17
Bolivar	0	4	1	5	0	4	2	6
Genesee	0	8	0	8	0	8	1	9
Clarksville	1	6	4	11	1	8	6	15
Miscellaneous	1	0	1	2	0	0	1	1
Total	6	36	10	52	5	39	16	60

BRADFORD FIELD.

Division of Field.	Oct. 31, 1886. New Rigs	Old Rigs	Drilling	Total	Sept. 30, 1886. New Rigs	Old Rigs	Drilling	Total
E. and W. Branches	5	10	4	19	1	10	8	19
Kendall Creek	0	0	0	0	0	0	1	1
Knapp's Creek	2	7	2	11	0	7	1	8
Foster Brook	0	5	2	7	1	5	1	7
Four Mile	0	3	0	3	0	3	0	3
Indian Creek	5	5	6	16	4	5	5	14
Cole Creek	0	4	3	7	0	4	1	5
Kinzua	0	0	1	1	0	0	3	3
Miscellaneous	1	0	3	4	0	0	1	1
Total	13	34	21	68	6	34	21	61

WARREN AND FOREST.

Division of Field.	Oct. 31, 1886. New Rigs	Old Rigs	Drilling	Total	Sept. 30, 1886. New Rigs	Old Rigs	Drilling	Total
Glade	3	0	10	13	4	0	5	9
Clarendon	4	4	7	15	6	2	7	15
Tiona	3	6	3	12	3	7	4	14
Cooper	0	2	1	3	0	2	2	4
Balltown	3	2	1	6	2	2	0	4
Kane	4	2	15	21	5	0	33	38
Grand Valley	6	5	11	22	17	0	20	37
Miscellaneous	9	3	11	23	6	0	15	21
Total	32	24	59	115	43	13	86	142

LOWER COUNTRY.

Division of Field.	Oct. 31, 1886. New Rigs	Old Rigs	Drilling	Total	Sept. 30, 1886. New Rigs	Old Rigs	Drilling	Total
Venango	21	7	40	68	15	10	37	62
Clarion	3	9	14	26	6	10	13	29
Butler & Armstrong	31	4	48	83	12	7	40	59
Washington	15	10	87	112	17	10	80	107
Shoustown, Etc	21	8	40	69	17	15	29	61
Total	91	38	229	358	67	52	199	318

GRAND SUMMARY.

Field.	Oct. 31, 1886. New Rigs	Old Rigs	Drilling	Total	Sept. 30, 1886. New Rigs	Old Rigs	Drilling	Total
Allegany	6	36	10	52	5	39	16	60
Bradford	13	34	21	68	6	34	21	61
Warren and Forest	32	24	59	115	43	13	86	142
Lower Country	91	38	229	358	67	52	199	318
Total	142	132	319	593	121	138	322	581
Total Sept. 30	121	138	322	581				
Difference	21	6	3	12				

Crude Market for October.

The same state of dullness and inactivity that has characterized the oil market for six months past continued through October. Fluctuations from day to day were small and little interest or animation was manifested. The gusher territory of the southwest was robbed of many of its terrors, during the last two weeks of the month, and if no more surprises are in store the crude market ought shortly to gain some strength. The Mt. Morris well, Greene county, has been used to some extent in affecting crude values, but when the true inwardness of the venture is once fully determined, its influence must soon pass away.

The month of October opened with the crude market at 62⅜c to 62½c, and closed with the figures at 66⅛c. The lowest price, 62⅜c, was recorded at Pittsburgh on the 1st, and the highest, 67⅛c, was reached at New York on the 18th. The lowest quotation for September was 61¼c and the highest 66c.

The range of prices for October was 4¾c as compared with 4¾c in September, 6½c in August, 3⅞c in July, 8¾c in June, and 12⅝c in May. The average price on the floor of the Bradford Exchange was 65⅛c in October, 63⅜c in September, 62c in August, 66c in July, 67c in June, 69⅞c in May, 74c in April, 77⅛c in March, and 80c in February. The average price for October one year ago was $1.05½.

THE CLEARANCES.

	October. Barrels.	September. Barrels.
Bradford Oil Exchange	24,445,000	26,000,000
Oil City "	62,273,000	68,000,000
New York Consolidated Exchange	98,278,000	152,345,000
Pittsburgh Petroleum Exchange	53,323,000	56,024,000
Philadelphia Oil Exchange	11,657,000	13,704,000
Total	250,478,000	316,073,000

THE PETROLEUM AGE,
DEVOTED TO THE
INTERESTS OF THE PETROLEUM TRADE.
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ANNUAL REPORT OF THE GEOLOGICAL SURVEY FOR 1885.

THE annual report of the Geological Survey of Pennsylvania for 1885, makes a substantial volume of 750 pages, richly illustrated with maps and plates. The articles of most interest to oil men are Mr. Carll's preliminary report on oil and gas, and Prof. Ashburner's summary of the Germania Oil Company's experimental drillings in Potter county. The map of the oil regions that accompanies this report, showing the location of the oil and gas deposits, has been before the public for some time. Among practical producers a publication of this character is regarded of more value than any other feature of the report. The work of the Geological Survey in this part of the country has been crippled to some extent by the insufficiency in the amount of the appropriation by the State Legislature, and the lack of interest and the habit of careless observation of facts, on the part of the oil driller.

The oil regions present grand opportunities for the study of geology, but the operator, as a rule, takes little interest in the subject. The wildcatter pays some attention to well records, but is anything but scientific in his deductions. If the venture into some remote locality proves a success the projectors of the enterprise are too busy in taking financial advantage of the results to note anything more than elevations and depths for guidance in drilling more wells; if a failure, it is rare that a second attempt is at once made in the same locality, and the unlucky parties move on to try again in some spot that appears more favorable.

A disposition for more careful study is of late being shown, especially in the oil and gas fields of the southwest, but it will be a long time before the conclusions of the most success of these observers is given to the public. The whole science of geology depends upon the careful collection and classification of facts, and if the Geological Survey had accomplished nothing more than the labor of compiling and arranging the great mass of valuable data that has been gathered from all sources, in a convenient and accessible form, it has already many times repaid its cost. To future explorers of the great oil and gas region of Pennsylvania it presents a mine of information that will always yield profitable returns. To the philosophical investigator and general student it furnishes the substantial basis for fresh geological theories.

The State geologists have been subjected to a considerable amount of unjust criticism by a portion of the press and public. It is not the province of the geologist to say that at any particular point the drill at a depth of so many thousand feet will strike a well of so many hundred barrels capacity. If a geologist were to make a prediction of this character he would at once be rightly set down as a charlatan of the most pronounced type. All scientists are hemmed in by limitations which none are more free to recognize than themselves. The geologist by careful study of the rocks and configuration of the country can only say here or there all the conditions of a petroleum or natural gas field exist. Such and such sands will be found at such depths, whether they contain oil or not in paying quantities the drill alone can determine, and this surely is sufficient. The conditions under which oil and gas exist in the rock structure of the earth are now thoroughly understood. The sand rock reservoirs have proved more numerous than was at first expected, but they are of such limited area, when compared with the vast extent of dusty territory, by which they are surrounded, that it is no wonder numerous errors are made before they are discovered.

Prof. Leslie meets the objections of that class of critics, who have urged that the geological report "follows instead of leads," by the republication of a letter of Mr. Carll, which was written ten years ago, and which points out the future line of oil developments in a striking manner. The decisive drill has followed the course of Mr. Carll's predictions, and fully vindicated the work of the Geological Survey.

THE PRODUCING REGION.

At the beginning of October there were 121 new rigs and 322 drilling wells in the New York and Pennsylvania oil regions, a total of 443. The number of wells completed in October was 279, with an estimated new production of 6574 barrels. The dry holes numbered 62, leaving 217 productive wells with an average yield of 30 barrels each. During September the entire region completed 217 productive wells and 36 dry holes, and the average of the new wells September 30 was 62 barrels. The average of the August wells was 48 barrels apiece. The October figures show an increase of 26 completed wells and a decrease of 6966 barrels in the new production. The decreased production for October is due to the rapid decline of the gusher territory at Washington, which is no longer capable of supplying wells that can maintain a large average for any great length of time. At the close of October there were 142 new rigs, 132 old rigs and 319 drilling wells in the entire region, a total of 593 as compared with 121 new rigs, 138 old rigs and 322 drilling wells, a total of 581 at the end of September. This is an increase of 21 new rigs, a decrease of 6 old rigs and 3 wells drilling, or a total difference of 12.

ALLEGANY FIELD.

In October many wells in the Allegany field were completed which had been temporarily delayed in reaching the sand, during the closing week of the month preceding by a scarcity of water and a deficit in the supply of casing. Owing to these causes the September report showed but 9 wells completed, while October completes 20, with a new production of 98 barrels. Mayor Shannon found a dry hole on lot 55, Wirt, in his efforts to develop more five-barrel territory in the Nile region. The Allentown Oil Company's venture, on lot 35, Scio, showed nothing better than gas upon being shot, and will tend to discourage further exploration along the supposed extension, northeast of Allentown. The Empire Gas Company drilled a good gasser on lot 1, Wirt, and one of moderate proportions near Little Genessee, while the National Transit Company secured a heavy gasser

on lot 61, in the town of Wirt. For the last day of October there were 6 new rigs, 36 old rigs and 10 drilling wells in the field, an increase of 1 new rig and a decrease of 6 drilling wells from the September figures. The Allegany pipe line runs averaged 5885 barrels a day in October, 6035 barrels in September, 6333 barrels in August, 6802 barrels in July and 6981 barrels in June. The average daily runs for October one year ago were 7081 barrels, for October, 1884, 8802 barrels and for October, 1883, 1275 barrels. A report to the effect that the Anchor Oil Company had been pulling out some of its wells in the Allegany field was denied in the October AGE, upon what was thought to be reliable grounds, but the fact nevertheless remains, and as many wells are now pulled out from month to month in this field as are completed by the drill.

THE BRADFORD FIELD.

There were 19 wells completed in the Bradford field in October and the new production is estimated at 99 barrels. The Smith Chemical Company completed a moderate gasser on the King farm, up the West Branch. The Ceres Gas Company found a showing of oil in their test well, near Ceres, in McKean county, but upon being shot the oil rapidly disappeared and a flood of salt water made its appearance. In September 22 wells were completed with a new production of 160 barrels. The figures on operations for October 31 are 13 new rigs, 34 old rigs and 21 drilling wells. There was a large decline in the pipe line runs during the past month, the average for October being 24,596 barrels a day, as compared with 26,394 barrels in September, 26,785 barrels in August, 27,587 barrels in July and 28,790 barrels in June. For October, 1885, the runs were 30,828 barrels; for October, 1884, 31,500; for October, 1883, 35,654, and for October, 1882, 42,107 barrels.

WARREN AND FOREST.

There were 103 wells completed in the Middle field in October, 16 of which were dry and the new production was 1010 barrels. In work under way the report shows another large decline, owing to the rapidly diminishing activity at Kane and Grand Valley. For October 31 there were 32 new rigs, 24 old rigs and 59 drilling wells in the Middle field, against 43 new rigs, 13 old rigs and 86 drilling wells at the close of September.

KINZUA VILLAGE.—The new development west of the river has revealed nothing the past month to indicate a very extensive deposit of petroleum. T. G. Phillips discovered a small producer of the two-barrel order on the Richardson lands, in the Sugar Run region, and Dr. Van Scoy is drilling a test well, near Morrison Station, between the Dew Drop pool and the southwestern part of the Bradford field.

CLARENDON AND TIONA.—There is little of interest to be said of the great gray sand district of the Middle field. E. O. Emerson developed a small gas well, near Tiona, on lot 202. But two wells are drilling on the southern extension. Horton, Crary & Co. and Fertig, McKinney & Co., two of the largest firms operating in this section, have retired the drill and will remain quiet until next spring. Work under way is confined at present to 7 new rigs and 10 drilling wells.

McGrew Bros. are drilling a well in the Cherry Grove district, on lot 683, 500 feet east of their old venture, on the same lot. The old well was never properly tested, the casing has not been removed and the hole contains considerable oil.

COOPER AND BALLTOWN.—The venture on lot 407, north of Henry's Mills, proved a failure, as was warranted by its location. James Welsh completed two wells on the southwest end of the Balltown district, one of which is rated at 20 and the other at 5 barrels. Grandin & Kelley are drilling a test on Fork run, still further to the southwest. The pipe line runs from the Cooper district averaged 495 barrels a day in October and 482 barrels in September, while from Balltown they were 667 barrels a day in October and 913 barrels in September.

KANE.—Thirty wells were completed in the Kane field in October with a new production of 565 barrels. On the last day of the month but 21 rigs and drilling wells were under way as compared with 38 at the close of September. Treat & Mallory found a good producer on lot 344 and have started seven more on the same lot. The Ryan, or Forlorn Hope Oil Company's venture, on 341, was a failure. Clinton & Swayne, on account of a disastrous fishing job, were compelled to move their rig at their No. 2 well on 345. Craig & Cappeau have reduced active work to a single drilling well, while the Associated Producers' Company, the Boston Oil Company and Rathbone & Co. will stop the drill entirely before the close of the present month. Shirley, Hochstetter & Co. and Coast & Sons completed their last wells in October. The runs from the Kane field averaged 4505 barrels a day in October, 4709 barrels a day in September, 4842 barrels in August, 5321 barrels in July and 5702 barrels in June.

GRAND VALLEY.—The Grand Valley district has already passed the zenith of its productive capabilities and future records can tell only of decline. Thirty-four wells were completed in October with a new production of 300 barrels. On the last day of the month only 11 drilling wells were under way as compared with 20 at the close of the month preceding. There is still a large amount of small territory left for the drill, but its development will be slow.

ELK COUNTY, ETC.—The developments southwest of Kane, in Elk and Forest counties, have, as yet, afforded only the most slender indications of the new field that is being so earnestly sought after. M. J. Feeley & Co.'s No. 2, on 3673, was a pronounced duster. The Armstrong & Boggs' test, on 2032, is a small producer, and Hughes struck another of the same kind on 3663. The Clark & Foster venture, on 3664, was a failure. The test of Cornwall & Roth, on 5134, Forest county, met a like fate. The National Transit Company completed four gas wells in October, on warrants 2695, 2676 and 2723.

THE LOWER COUNTRY.

There were 137 wells completed in the Lower country in October, with a new production of 5367 barrels. Shoustown and Washington together supply 39 of these wells and 4060 barrels of the production. On the last day of October the Lower country had 91 new rigs and 229 drilling wells, as compared with 67 new rigs and 199 drilling wells on the last day of September.

VENANGO.—The wildcatter is very active in various parts of old Venango county and the search for oil in the Speechley sand still continues. Nothing definite was discovered in October, and no fresh areas of producing territory developed. The bulk of the present operations are confined to Tipperary and the southeast portion of the Tarkill district. The experiments looking for a southwest extension to the Tipperary pool have thus far proved failures. A brace of small producers that are more closely allied to dry holes have been drilled between Pithole and Oleopolis. Oil Creek is coming in again for a share of attention from operators, who are content with slow and moderate paying investments. Red Valley shows increased activity and further at-

tempts are being made to secure a productive field at Nickleville. The production of the Tarkill field is rapidly declining as shown by the runs of the National Transit Company, which averaged 1009 barrels a day in October, 2258 barrels in September, 3756 barrels in August and 4038 barrels in July. In September and October the Excelsior Oil Company received the oil of Taylor, Torrey & Murphy, which is not included in these figures. The daily runs from Red Valley have averaged as follows: January, 783 barrels; February, 1017; March, 1206; April, 1231; May, 1260; June, 1039; July, 1181; August, 940; September, 899, and October, 778 barrels. The total runs from this district to October 31 amount to 853,667 barrels. There were 48 wells completed in the Venango division of the Lower country in October and 12 of them were dry. The new production foots up 425 barrels. This is a slight increase over the September estimate. The record of active work shows 21 new rigs, 7 old rigs and 40 drilling wells for October 31, and 15 new rigs, 10 old rigs and 37 drilling wells for September 30.

CLARION.—A small amount of drilling continues at various points about the Cogley field and along the eastern side of the old Clarion belt. On the Edmunds heirs' property, on the western side of Cogley, Urquhart & Lavens completed a well during October which started at 35 barrels. It is a profitable strike and has induced them to start No. 8 on the same farm. On the Lloyd lands, across the line in Venango county, Dr. Metzgar has drilled the Boden & Barnum dry hole to the Speechley sand and struck a fair amount of gas. A mile to the east of the Cogley streak Berlin & Sons completed a small producer on the Jacob Black farm, at Pitch Pine City. It is located near old wells which had a showing of oil when drilled years ago, and is an indicator of territory of a light calibre. A number of parties are looking for gas and oil in the country about the Cherry Run camp-meeting ground. Mr. Heydrick and others have leased a block of land and are drilling a well on the Amos Pollard farm. There is a slight amount of work in progress about Shippenville, but the production, which results from its prosecution, does not aid in keeping prices at a low level. At last accounts the test well at Corsica, in the eastern part of the county, was still drilling. M. E. Hess, of Edenburg, a veteran operator in Venango, has leased a large amount of land in Limestone township, where he expects to drill a number of test wells, near Arthur's Station, along the P. & W. R. R. M. K. McMullin, Feeley & Co., drilled a well below the level of the Clarion sand and found it to be dry. The DuBois Oil Company's test, at Vowinkle, was abandoned after being sunk to a depth of more than 2000 feet. It was reported dry in the Clarion sand several months ago.

BUTLER AND ARMSTRONG.

The new work about the Hickey farm well, east of Millerstown, and in the new development south of Reibold Station increased the number of rigs and drilling wells in these old counties. Along the Connoquenessing creek, southwest of Reibold Station, Phillips Bros. finished two wells on the Slater farm, each of which started at 175 barrels per day, and was producing 100 at the close of the month of October. Their No. 2, on the Critchlow farm was small and was rated at 50 barrels when nearly a month old. The McJunkin well, on the Critchlow farm, near the old Reed dry hole, was raised to a fair producer by the use of glycerine. At the close of October there were seven rigs and drilling wells on the Critchlow, Slater and adjoining farms. Phillips Bros. were the owners of five of them and Leidecker the remaining two. The streak as thus far developed appears to be narrow. About half a mile to the eastward of these good wells Lockwood & Tabor drilled a well on the Holstein farm. It demonstrated the existence of 38 feet of sand and was counted a dry hole when finished, but subsequently filled up with oil. The Lentz well, on the Markle farm, is rated at a five-barrel pumper. The Leidecker well, on the Galesbaugh farm, is a confirmed duster. The Breakneck Oil Company are drilling a well on the Widow Croft farm, near Callery Junction. Clark, Hoag & Co. are sinking one on the Marshall, near Mars Station. About the well on the Hickey farm, southwest of the Bromfield pool, there were 25 rigs and drilling wells at the close of October. The wells in this section range in size between 20 and 60 barrels. A few wells are being drilled at different points along the Ort streak or pool. Showalter Bros. & Hartman are drilling four wells on the Jenny Boyle farm, on the first of this month. At last accounts W. S. Guffey & Co. were fishing near the sand at their test well, on the George Rogers farm. At the southeastern end of the Thorn Creek pool the drill is moving at a slow pace, and operators have ceased to look for an extension of territory. The streets of Butler on a dark night would not lead one to believe that gas is being piped from the wells in the immediate vicinity of the town across the country to New Castle, but such is the case and a number are now drilling to keep up the supply.

SHANNOPIN.

The Shannopin or Shoustown field, as it is sometimes called, lost its value as a market crusher through the work of the drill during the month of October. The three gassers on the Johnson, Twyford and Vesey farms, and the dry holes on the Scott heirs and Harper farms fairly condemn the country north and northeast of the gusher on the Marks farm. It is now certain that the field does not extend in this direction and the rich pool on three sides is surely defined. South of Shannon & Co.'s wells, on the Widow Thompson, and the Solar Oil Company's, on the Morrow, there is room for a streak to extend in a southerly direction. But east of this gap or opening the sand at the Lovell well, on the McCartney farm, thinned out to eighteen inches, and for this reason it is quite likely that the belt will not extend much below the county line. The Raccoon Oil Company's No. 2, on the Marks farm, showed drainage or a sand rock capable of affording wells of a smaller calibre. At its best it had for a day an average production of 25 barrels per hour. Shannon & Co.'s No. 5, on the Widow Thompson farm, started at 550 barrels and was doing about 300 at the close of the month. The pipe line runs for October averaged over 4000 barrels per day. The usual amount of wildcatting is going on in different parts of Allegheny county. George H. Dimick & Co. are drilling a second well on Neville Island, which lies southwest of Mt. Nebo. A test well is being started near Clinton postoffice, in the extreme western part of the county. J. M. Guffey and others are still looking for oil in the country which falls in range with the Mount Nebo section, and to the southwest of the old Mount Nebo well.

WASHINGTON.

James G. Blaine's visit to the Washington oil field was not the only event which happened to it in October of interest to oil men. A number of dangerous wildcat wells were drilled through or below the level of the Gordon sand and demonstrated to be barren of oil. One of the most important was the test well on the Donaldson farm, northeast of the Taylorstown well. This well

proved to be a roaring gasser and shows that the rock is not charged with oil at this point. The old well at Taylorstown has been packed, and since that operation was performed, its production has increased to 80 barrels per day. The Amity Oil Company's well, on the Price farm, was dry or had a small showing of oil from the Gordon sand, but struck a heavy vein of gas in the sand which underlies the Gordon rock. Two small wells and a dry hole were found close to the western boundary line of the Gordon pool. The two small wells on the property of the Forest Oil Company are not expected to make over ten barrel wells. The Associated Producers and others found a dry hole and a small well on the Wylie farm, across the line from the light producers on the Hall farm. The great gushers of the Smith pool are weakening and the production of the field at this writing has declined eight or nine thousand barrels from its maximum yield. At the southwestern end of the Smith pool, Union Oil Company's No. 3, on the Morgan farm, and Coast & Son's No. 3, on the Linn farm, failed to find the lower pay streak of the fifty-foot, and are small producers. At this writing, November 6, Caldwell & Co.'s well, on the Van Kirk lot, is nearly through the Gantz sand and barren of oil in this rock. The Weaver, Wilson & Williams well, on the Andrews farm, about one mile due east of the producing wells, on the Cameron, Fergus and Munce farms, has been drilling in the Gantz sand long enough at this writing, November 6th, to be below that rock or through the break into the fifty-foot. The oil scouts who make a detour of the field, have yet to learn that oil in paying quantities has been found at this well. It is mystified, and it is said that the well will be used to influence market values. The McGahey district is the section of the field in which the interest will be centered during the days of November. The Chartiers Oil Company & F. W. Andrews' No. 1, on the extreme eastern corner of the Wright farm, and one location west of the Mascot Oil Company's No. 1, on the McGahey, struck the dark cap of the Gantz sand on the afternoon of November 5th at a depth of 2209 feet. Nine bits were run up to Saturday evening, when it was estimated that the sand had been penetrated to a depth of ten feet. The McGahey, No. 1, got her first oil when twenty-eight feet in the sand, and this well cannot be expected to make a display of crude before that depth is reached. John McKeown is watching his No. 1 well, on the Quail farm, a half mile southwest of the McGahey, drilled into the deep sands with a keen interest. The sand was struck on the evening of November 5th at a depth of about 2365 feet. The top of the sand was of prime quality, and the well shows a small amount of gas from the top of the Gantz sand. At present the McGahey, No. 1, is agitated every day by running the bailer, and its daily production is about 195 barrels. Northeast, southwest and about the McGahey there are 26 rigs and drilling wells under way. The West Virginia Natural Gas Company are building two rigs in the Taylorstown section. Of the rather large number of wells and rigs which appeared in the monthly report, November 1st, Isaac Willets & Son had sixteen on the Munce farm. The production of the field during the week ending with November 6th has been maintained and slightly increased by torpedoing old wells.

Below is a list of all wells in the field which were producing October 9th, with their production on that date and the same wells with new ones added to the list with their yield on November 6th:

Farm.	Operator.	Produc. Oct. 9. Barrels.	Produc. Nov. 6. Barrels.
Gordon,	P. L. & H. Co., No. 1	20	6
"	" No. 2	--	--
"	" No. 4	45	25
"	" No. 5	60	36
Hess,	" No. 2	12	--
"	" No. 3	20	18
"	" No. 4	30	35
Gantz,	Citizens' Oil & Gas Co., No. 1	30	26
Weaver,	" No. 3	8	10
Weirich,	Forest Oil Co, No. 1	12	15
"	" No. 2	15	--
Barre,	" No. 1	142	230
"	" No. 2	--	125
"	" No. 3	240	200
"	" No. 4	120	552
"	" No. 5	900	240
"	" No. 6	60	648
Hall,	" No. 1	2	3
"	" No. 2	200	65
"	" No. 3	25	30
"	" No. 4	--	10
Curry,	" No. 1	10	8
Taylor,	Union Oil Co., No. 1	195	112
"	" No. 2	75	50
"	" No. 3	330	106
"	" No. 4	350	210
McGovern,	" No. 1	23	23
Clark,	" No. 1	25	18
Dye lot,	" No. 1	--	410
Morgan,	" No. 1	600	456
"	" No. 3	--	67
Davis,	" No. 1	565	337
"	" No. 2	1300	747
"	" No. 3	--	78
Linn,	Coast & Co., No. 2	263	210
"	" No. 3	--	--
Weirich,	" No. 1	15	15
Hayes,	" No. 1	10	10
Lead Works Lot,	McKeever & Mulholland, No. 1	10	11
"	" Marsh & Caldwell, No. 1	12	11
Smith,	Willets, Young, Craig & Co., No. 1	62	18
"	" " No 3	182	76
"	" " No. 5	--	200
Cameron,	" " No. 1	489	140
"	" " No. 2	22	14
"	" " No. 4	63	168
"	" " No. 5	493	325
"	" " No. 6	--	100
"	" " No. 7	--	--
Shirls,	Shirls, No. 1	--	42
"	" No. 2	30	23
"	" No. 3	12	10
Stewart,	Fisher Oil Co	453	480
Miller,	Guffey & Co, No. 1	50	55
Hall,	Guffey & Co., No. 1	15	6
Manifold,	Pew & Emerson, No. 1	125	90
"	" No. 2	55	50
Gabby,	" No. 1	5	5
Clark,	Thayer & Co., No. 1	14	75
"	" No. 2	218	185
"	" No. 3	87	45
"	" No. 4	156	168
Clark,	Thayer & Co., No. 5	240	120
Munce,	Willets & Son, No. 1	145	99
"	" No. 2	10	3
"	" No. 3	170	72
"	" No. 4	25	5
"	" No. 5	13	--
"	" No 7	360	100
"	" No. 8	405	185
"	" No. 9	936	315
"	" No. 10	720	190
"	" No. 11	--	--
"	" No 12	1152	688
"	" No. 13	--	85
"	" No. 17	--	50
Montgomery,	J. L. McKinney & Co. & Robbins, No. 1	18	18
Taylor,	Galligan & Co., No. 1	100	100
Clark,	Hallam & Co., No. 1	--	--
Wiley,	Munhall & Co, No. 1	16	10
"	" No. 2	16	5
Vandergrift,	Taylorstown, No. 1	40	90
Munce,	John McKeown, No. 1		
"	" No. 2		
"	" No. 3		
"	" No. 4	1000	650
"	" No. 5		
"	" No. 6		
"	" No. 7		
Fergus,	Chartiers Oil Co	--	50
Fair Ground,	Wheeling Oil Co., No. 1	720	240
McGahey,	Mascot Oil Co.,	240	195
Zeit,	Associated Producers, No. 2	10	6
Miller,	Reed & Co	768	190
Weaver,	Hart Bros	--	25
Martin,	Central Oil Co, No. 1	--	121
Wiley,	Associated Producers, No. 2	--	39

Date.	No wells.	Production Barrels.
October 9	85	15,361
November 6	95	11,070
Difference	10	4,291

GREENE COUNTY, ETC.

E. M. Hukill & Co.'s test well in Perry township, Greene county, was the cause of a mild scare among speculators when first reported on the 21st, 22d and 23d of October. It is located on the D. L. Donley farm, one-quarter of a mile southeast of the unpretentious village

of Mt. Morris, and along a small stream called Morris run, which empties into Dunkard creek, near the village. The well is southwest of the old Dunkard creek development, and quite a long ways up the creek from it. The drill was started at this well on the 2d of March, 1886, and they have since been drilling, fishing and reaming it down. Oil was first struck on the night of October 20th, and on the morning of the 21st, at nine o'clock, the well made a flow. It spurted again on the evening of the 22d and on the 23d. They began building a 250-barrel tank October 25th, and drilled the well deeper toward the close of that week. It flowed several times when the tools were drawn. It is troubled with salt water in its present condition and will be reamed lower and the water cased off before it is drilled deeper. The depth of the well is kept a mystery, though figures representing its depth have been given out by different parties ranging between 1750 and 2200 feet. The bottom of the Waynesburg coal rests on the bed rock of the creek by the derrick and is on a level with the mouth of the well. Along the Monongahela river this coal bed is 360 feet above the Pittsburgh vein. At the Mount Morris well the Pittsburgh coal is reported to have been struck at 321 feet by one party and at 360 by another. Hence the Gantz sand at this well should be found at a depth of about 2160 feet. The representative of the AGE, who visited the well, is inclined to the belief that it is less than 1800 feet deep. On the Hathaway farm, near Davistown, Hukill & Co. are reaming another well down which has been drilled to a depth of 1000 feet. The Gregg well at Willowtree is dry in the Gantz sand and is now fishing at a depth of 2275 feet.

THE SOUTHWEST.

The Natural Gas Company, of West Virginia, Craig & Cappeau and others, are sweeping over the whole southwest in their search for crude. The gas company mentioned above, in which Mr. J. M. Guffey is a leading spirit, have four wells now drilling in the southwestern part of Greene county, and in Marshall county, West Virginia. At Moundsville Craig & Cappeau are drilling No. 2 and have a rig building for their No. 3. The old Moundsville well is pumping from five to seven barrels daily from the shallow sands. Craig & Co. have a rig up on the north side of the Ohio river, on the Deutcher farm, on Rea's run. It is west of the town of Wade, on the Ohio river. At Eureka a number of Bradford operators are interested in sinking a well. In the country southwest of the Washington field drilling is slow and expensive, and a large amount of pipe is used in casing off the caves and salt water veins.

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for October, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of October		1,364,004.28
Quantity of crude petroleum at close of Oct.	1,201,675.45	
Less sediment and surplus	144,072.21	
		1,357,603.24
Receipts during October		191,669.16
Received in iron tanks		17,765.60
Deliveries during October—to refiners	214,722.54	
" " " to other parties		214,722.54
Outstanding certificates, accepted orders, etc.		694,000.00
Credit balances		663,603.24
Total liabilities October 31, 1886		1,357,603.24

SEPTEMBER SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of September		1,375,192.90
Quantity of crude petroleum at close of Sept.	1,513,278.97	
Less sediment and surplus	149,274.69	
		1,364,004 28
Receipts during September		201,314.98
Deliveries during Sept.—to refiners	210,436.41	
" " " to other parties		210,436.41
Outstanding certificates, accepted orders, etc.		740,000 00
Credit balances		624,004 28
Total liabilities, September 30, 1886		1,364,004.28

The Macksburg Field in October.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est.	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	1500	1400
May	48,258	1500	1605
June	64,982	1500	2216
July	75,737	1500	2492
August	74,228	1500	2443
September	68,110	1500	2320
October	63,619	7000	2278
November	60,926	7000	2264
December	61,113	7000	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	2166
April	64,137	7890	2401
May	58,596	6630	2104
June	65,379	2871	2275
July	58,410	4080	2016
August	57,492	2790	1945
September	48,918	1240	1672
October	46,937	3240	1619

During October four wells were completed in Macksburg, with a production of 40 barrels, and on the last day of the month, there were seven drilling wells under way. In September 6 wells were completed, and on September 30 there were 6 wells drilling and 7 rigs up and building. On October 31 the number of producing wells in the Macksburg field was 455, with an average daily yield of 3½ barrels.

There were no experimental wells completed in the vicinity of Macksburg in October. At Eureka, West Virginia, progress has been very slow. Three drilling wells have been shut down, for lack of water, and two others, which were ready to commence drilling, have been delayed from the same cause. W. G. Decker, of Macksburg, is drilling a test well for some outside parties at Newark, in Licking county. The contract calls for a total depth of 3000 feet, at which point the Lima sand is supposed to be. The well is more than half way down.

Railroad Shares.

Prices of railroad shares in the Philadelphia Petroleum and Stock Exchange for the month of October, 1886:

	Opening.	Highest.	Lowest.	Closing.
Pipe Line Certificates	62½	67	62½	66
Dela., Lackawanna & Western	137½	143	135½	141½
Delaware & Hudson	105⅞	107⅛	105⅜	107⅛
Erie	35¼	37⅛	34⅜	35¾
Jersey Central	62	63⅜	48¼	50¼
Kansas & Texas	36	37¾	35¼	36½
Louisville & Nashville	50⅛	58½	49¾	57⅞
Lake Shore	91¼	95⅞	89⅞	95¼
Norfolk & Western, preferred	47¼	47¼	47¼	47¼
Northern Pacific	28⅞	29⅛	28¼	28⅞
Northern Pacific, preferred	62	64⅜	61⅜	63⅛
Northwest	117⅜	118¼	115⅛	117¾
New York Central	111⅛	113½	110½	113¼
Oregon & Trans-Continental	33⅝	35	32¾	34¼
Pacific Mail	57	57⅝	51⅝	54⅜
Reading	36⅛	38⅜	33¼	36½
St. Paul, common	95⅞	96⅛	93	94¼
Texas Pacific	17¼	21¾	17¼	21¾
Union Pacific	61	63½	58¾	60⅜
Western Union	73⅜	79⅝	72½	79⅜
Wabash, preferred	36⅛	36½	36⅛	36½
American C. S. Oil Trust	54⅞	56	54	56
Reading General Mortgage 6's Coupon Bonds	103½	103½	103½	103½

Total sales of stocks for month ending October 31st.....323,600

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO OCTOBER 31, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91.102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5, 80
December	98,582	17 342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217.408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8.376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8.178
September	48,553	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,516	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87 193	261,784	8,445
April	31,191	126,860	71,989	230, 40	7,668
May	30,010	107 514	70,069	207,593	6,696
June	25,348	89.554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67 883	151,913	4,900
September	19,590	64,648	63,453	147,691	4.923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25.469	62,262	2,224
March	11,558	25,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9.367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2, 31
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71 459	2,305
June	10,324	18,154	33,126	61,604	2,053
July	10,731	18,050	35,976	64,757	2,089
August	9,305	17,289	24,788	51,382	1,657
September	7,671	14,465	27,384	49,520	1,651
October	7,723	15,348	20.677	43,748	1,411
Tot'l Oct. 31, '86	3,597.269	2,645,856	2 239,509	8,482,634	5,157

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district to October 31, 1886. Cherry Grove has produced 3,597,269 barrels, Cooper 2,645,856, and Balltown 2,239,509 barrels. The daily average runs from the three fields during October were 1411 barrels, a decrease of 240 barrels from the September figures.

The daily average runs from the Cooper and Henry's Mills section for October were 495 barrels, September 482 barrels, August 558 barrels, July 582 barrels, June 605 barrels, May 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, and for January 623 barrels.

The Balltown field had a daily average of 667 barrels in October, 913 barrels in September, 800 barrels in August, 1161 barrels in July, 1104 barrels in June, 1376 barrels in May, 832 barrels in April, 1059 barrels in March, 1056 barrels in February, and 1063 barrels in January. Cherry Grove averaged 249 barrels in October, 256 barrels in September, 300 barrels in August, 346 barrels in July, 344 barrels in June, 338 barrels in May, 347 barrels in April, 353 barrels in March, 305 barrels in February, and 306 barrels in January.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to October 31, 1886, inclusive, has been 8,482,634 barrels, a total daily average of 5157 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

Month.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
September	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270.644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239	Cogley.	Daily
April	280,005	9,333	Runs.	Average.
May	232,138	7,488	3,927	127
June	105,774	5,905	18.266	609
July	119,531	3,856	37,848	1,220
August	70,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	153.110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162.479	5,241
January, 1886	39,933	1,288	138,549	4.469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108.541	3,618
May	37,752	1,218	100,994	3,258
June	40,167	1,339	88,082	2,936
July	40,631	1 311	77,584	2,503
August	42,097	1,358	67,405	2,174
September	41,652	1,388	60,140	2,004
October	41,835	1,349	57,031	1,840

For the eighteen months ending with October 31 the Cogley oil field has produced 1,629,741 barrels of oil, a daily average of 3052 barrels. The daily average for 503 days ending September 30, was 3126 barrels. There has been a steady decline in the production of the Cogley field, since last November, in which month the maximum output was attained. The decrease since that time amounts to 3576 barrels, in the daily average.

The Thorn Creek and Baldridge runs averaged 1349 barrels a day in October, 1388 barrels a day in September, 1358 barrels a day in August, 1311 barrels a day in July, 1339 barrels a day in June, 1218 barrels a day in May, 1299 barrels a day in April, 1369 barrels a day in March, 1218 barrels a day in February, 1288 barrels in January.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 1st of October had produced 357,484 barrels; a daily average for 396 days of 903 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April, 915 barrels a day in May, 1262 barrels a day in June, 4038 barrels a day in July, 3756 barrels a day in August, 2258 barrels a day in September and 1009 barrels a day in October. The September and October runs are exclusive of the oil taken by the Excelsior Pipe Line, which commenced running oil from this field in September. The Pontius or McKeever pool, in Butler county, produced 90,777 barrels in October, 84,126 barrels in September, 85,331 barrels in August, 70,458 barrels in July and 70,489 barrels in June.

PETROLEUM PRODUCTS.

THE MARKET FOR LUBRICATING AND MISCELLANEOUS OILS AND REFINERS' SUPPLIES, NOVEMBER 10, 1886.

[Reported expressly for THE PETROLEUM AGE.]

REVIEW OF THE NEW YORK MARKET.

The past month has proved satisfactory so far as the volume of business done is concerned, but the prices ruling are still very low, especially on all the lubricating oils, nor is there a prospect of early improvement in this respect. October and November are ordinarily expected to be among the busiest months of the year in the lines of trade covered by this review, and so far the dealers and manufacturers have no cause to feel disappointed. In mineral lubricants there is a change in the qualities called for at this season, the oils of low cold test being now in demand, while those suitable only for summer use are now almost entirely neglected. The changes in values during the past month have been few in number and are of comparatively little importance. The animal and fish oils are still very low and show no indications of early improvement, while the mineral lubricants are somewhat irregular with the supplies of most grades in excess of requirements. Other articles embraced in this review show very little change, but share in the general improvement in trade.

ANIMAL AND FISH OILS.

Cod.—While prices show no improvement the situation in other respects is somewhat improved. There has been a fair movement and the outside parcels which were the cause of the collapse in values have mostly found purchasers, though there is sufficient still offering to prevent any important appreciation of values. No important sales are reported, but there appears to be a steady movement, consumers purchasing as their necessities prompt them. At 28c there have been sales in this market and further parcels are obtainable at that figure, while in the eastern markets farther sales at 25c were reported. From store here 30c is generally asked and obtained. Tanked is quoted at 30@33c, as to quality. For Newfoundland there has been only a moderate demand, the difference in the price, the ruling figure for Newfoundland, being 37½c for round lots, while for parcels from store 40c is asked.

Elaine.—The demand for this oil has not shown the improvement noticeable for most others, nevertheless prices have been kept pretty steady at 38@40c, the sales at the inside figure being in a large way. There is nothing in the condition of the market for this oil to warrant the expectation of an early change in price.

Lard.—Since we last wrote a still further decline has taken place in prime city, and sales as low as 48c are reported to have been made, though pressers usually quote 49c as their bottom price. For small lots 50c has been accepted, and this is about the present price. Western is quoted at 46@47c, and some considerable parcels have lately been placed here. Extra No. 1 is firm at 45@46c, with the supply light, pressers claiming difficulty in securing crude material. No. 1 is offered freely at 40@42c and No. 2 at 38@39c. The demand for these grades has been fair, but the supply is large, and prices consequently a little weak.

Menhaden.—Good merchantable northern is held quite firmly at 21c, while some of the larger holders have now advanced their views to 22c and refuse to sell at less. The demand has been fair, and during the past ten days fully 1600 barrels have changed hands. The season is now over and would have proved a profitable one, but for the fact that so large a stock was carried over from last season. Most of the oil of 1885 could have been disposed of at considerable above the present market value of new oil, but manufacturers preferred to hold their oil, believing that by so doing they would compel consumers to pay a higher figure. The result was a very large stock was carried over and substitutes have been used. Whether manufacturers will repeat this course remains to be seen. Southern oil has sold in the East at 18c, but we understand the balance is held at 19@20c. The demand for pressed and bleached has been good and full previous prices have been maintained. We quote dark pressed at 24@25c, light pressed at 25@26c, bleached winter at 28@29c and extra bleached winter at 32c.

Saponified.—There has been a better movement, but the increase in the outlet has not been of so marked a character as has been noticeable in other oils. Prices show little variation, 38@40c being about the range as to quantity. The supply has been ample, but there does not appear to be any special pressure to sell.

Sperm.—There has been a weakening in the market for crude since our last and sales of about 2000 barrels have been made at 70c, with some small lots of lower grade at 67@68c, the bulk for manufacture. As the demand for refined has been larger of late there will doubtless be an increased call for crude and no further depression in values is therefore apprehended. The receipts at New Bedford have been quite large and the stock there is now something over 22,000 barrels. Refined, especially bleached winter, is in good request, dealers reporting a large increase in the orders coming in. Refined is also lower to correspond with the decline in crude. We quote natural spring at 72@73c, bleached spring at 77@78c, natural winter at 77@78c and bleached winter at 82@83c.

Whale.—Crude at New Bedford has suffered a further decline of about 2c, Arctic being now quotable at 30c and South Sea at 28c. At these figures some fair sales have been effected, mostly for manufacture. The stock is now about 11,000 barrels. The latest reports from the Arctic fleet are to the effect that up to the first of the present month over 150 whales had been taken which would indicate that the present year's catch will equal that of last year. Refined has been in good seasonable request and prices have remained steady, manufacturers having made no change in their quotations. We quote natural winter at 38@39c, bleached winter at 40@41c, extra bleached southern at 42@43c and extra bleached northern at 44c.

MINERAL OILS.

Black.—As the temperature decreases the demand for oil showing a better cold test increases and the others become neglected. The principal call has latterly been for 15° and 25° cold test. Summer is now difficult to dispose of and prices are entirely nominal, though 5@6c may be given as an average quotation as to quality. For 25° cold test 7@7½c is quoted, as to maker, and this price is generally obtained. For 15° cold test 8@8½c is quoted, though some lots might be had at 7½c, but probably of a quality to warrant the difference in price. The demand for these oils is good, and notwithstanding the supply is large there would appear to be no need of sacrificing them. There have been inquiries for zero, but we hear of no sales, and the quotation of 10c is given as a nominal one, though orders could be placed at that figure.

Cylinder.—Probably the most marked improvement in the demand for mineral lubricants has been for cylinder stocks, and more particularly for the best grades of high

fire test light filtered. Prices have not varied and 16@18c is still the range for reliable stock, warranted 600° fire test, though one or two brands are held up to 19c. Light filtered, 550° fire test, may be had at 15c. It is rare that any 575° fire test stock is now offered, while formerly it was regularly quoted and offered freely in the market. The supposition is that it is worked off as full 600° fire test by irresponsible parties, as we are informed by a manufacturer, he has a ready sale for all he has at 1c under his price for 600° stock, and yet the parties purchasing the same never offer 575° stock. Dark filtered 600° fire test is in good request and is quoted at 12@15c, as to quality, while off quality stock is offered lower. Dark steam refined does not meet with much favor and may be had all the way from 8 to 12c, as to quality, the latter figure, however, being only obtainable for a choice article. An extra cold test stock is offered on this market at 25c.

Neutral.—The supply is still quite large, but by no means burdensome. The demand is principally for the finer grades, and any manufacturer able to show an improvement over others is certain to secure not only the orders, but a better price also. For 32° gravity 18c is quoted and generally obtained, although sales are reported to have been made at 17@17½c. For 34° gravity 15@16c is the price, according to quality. For 37° gravity 14c is quoted. These prices are for best quality oils, strictly bloomless, but oils off in quality are obtainable at varying rates, in fact at any price the purchaser will pay, though the proportion of low quality on the market is smaller than formerly. This is doubtless due to the fact that manufacturers have discovered it to be more profitable to make as good oils as possible.

Paraffine.—The conditions are somewhat better than at the time of our last writing, though the prices realized show very little improvement. The market is still glutted with all grades, but the improvement in the demand has prevented the demoralization from becoming worse. For 25° gravity 8½@9c is quoted, and while sales have been made at 8c it is doubtful if a moderate order could now be placed under 8½c. Of course low qualities can be had at even less than 8c. For 28° gravity 7@7½c is now asked and generally obtained. A lot sent here for quick sale would probably not bring above 6½c, and during the present condition of supply and demand we should advise against consignments. A light call has been noted for 30° gravity and the little to be had is held firmly up to 7c. Red oils are to be had at 12½@14c and are in fair request.

The following quotations are the wholesale market prices on mineral oils:

Black reduced, 29 gravity, 25@30° cold test ℔ gal	7 — 7½
Black reduced, 29 gravity, 15° cold test	8 — 8½
Black reduced, summer	5 — 6
Cylinder, light filtered, 600° fire test	16 — 18
Cylinder, dark filtered, 600° fire test	12 — 15
Cylinder, cold test filtered	20 — 25
Cylinder, dark steam refined	8 — 12
Franklin, natural, 32 gravity	18 — 20
Neutral filtered, 32 gravity	17½— 18
Neutral filtered, 34 gravity, bloomless	15 — 16
Neutral filtered, 37 gravity, bloomless	14 — 14½
Neutral filtered, 32 gravity, wool stock	11 — 12
Paraffine, 22½ gravity	14 — 15
Paraffine, 25 gravity	8½— 9
Paraffine, 28 gravity	7 — 7½
Paraffine, 30 gravity	7 — —
Red, 22½-23 gravity	13 — 14
Smith's Ferry, 33 gravity	7½— 8
Smith's Ferry, 34 gravity	7 — 7¼
West Virginia, natural, 29 gravity	18 — 20

LARD, TALLOW, WAX, ETC.

Lard.—The fluctuations have been within a narrow limit until the past ten days, when a decided upward tendency was developed. The sales have been quite large and speculation on the exchange at times quite lively. Western steam is now quoted at $6.18@6.20, and city steam at $6.05@6.10, while steam refined has advanced to $6.60@6.65. The stock on hand here is 44,000 tierces, which is considerably above the average, and probably accounts for the slow upward movement of prices.

Tallow.—In sympathy with lard and owing to the troubles at the west the price has advanced under a good demand, both legitimate and speculative. Sales have been made at 4⅝c and this is now the market price.

Stearine.—Lard stearine has been moving moderately but does not partake of the appreciation in values noted for other greases. Sales have latterly been made at 7¼@7⅜c, and that is the best price obtainable. Oleo stearine is firm at 6¾c for choice city, which is a decline of ¼c since our last report.

Paraffine Wax.—The demand has been as good as could reasonably have been expected, and the fact of this demand has caused an influx of supplies, both of crude and refined, that has prevented any appreciation of values. The market is now in about the same position as last month, with 4¾c the best price obtainable for crude of 126°@128° m. p. For full 128° m. p. 5c is asked and generally obtained. The supply of 130° m. p. does not increase and it at times appears difficult to place an order, although 6c is offered, and sales of moderate parcels are reported at 6@6¼c. Refined has been in improved request, but owing to the large supply prices have weakened. For 132° m. p. 8½c is asked, while for 134°@136° 9c is the prevailing price. There is now a better supply of strictly 136° m. p., and guaranteed parcels are to be had at 10c. Soft wax of high melting point is in request, with the supply not equal to the demand. It is difficult to give quotations on this quality, but buyers appear willing to pay a fair figure for a wax to suit their particular requirements.

Petrolatum.—Our prices have been objected to as being higher than could be realized in a large way. This is without doubt true, so far as large parcels from manufacturers' hands are concerned, but we aim to give a true statement of the condition of the market here and correct prices on such parcels as are ordinarily called for. A manufacturer sending a large quantity here would no doubt be compelled to accept a price which he would consider a sacrifice, but the prices given by us are those realized by regular dealers. This we stated in substance last month. The quotations are 14@15c for white, 10@12c for light yellow, 9@10c for yellow, 8@9c for dark and 8@10c for veterinary. These prices do not include containers if ordered in small cans. Several makes may now be had of either high or low melting point at same price.

REFINERS' SUPPLIES.

Acids.—There has been no change in the price of acids, but the market is somewhat firmer and as the manufacturers are kept busy in supplying the increased demand which has developed during the past few weeks a slight advance in the near future would not prove surprising, especially in view of the fact that one of the largest concerns in this line has just suspended. For 66° sulphuric $1.10 per 100 pounds is required, but contracts have been placed placed at $1.05, and some are being filled which were made at $1, but these could not, at the present time, be duplicated. Nitric of 42° is quoted at 6⅞@7c, and is pretty firm at these figures. Mixed acid for nitro-glycerine manufacture is quoted at varying prices as to quality, and the proportions required. For equal parts mixtures 3@3½c may be quoted, and for 7 parts nitric to 4 of sulphuric—probably the most popu-

lar and efficient, or effective—3⅞@4½c is the range. The extreme prices quoted by some of the dealers is due to the fact that there is supposed to be some mystery about the composition of this mixed acid, and they have been fattening on the credulity of purchasers. THE PETROLEUM AGE is the first and only trade journal that has given any attention to this subject and the publicity has already caused some of the dealers to revise their prices. The days of 5@6c per pound for mixed acid are passed, owing to the publicity we have given the subject.

Nitric, 36°	℔ cwt.	$5 40—5 60
Nitric, 38°		5 60—6 00
Nitric, 40°		6 00—6 25
Nitric, 42°		6 75—7 00
Sulphuric, 60°		95—1 05
Sulphuric, 66°		1 05—1 10
Mixed equal parts, 49° n, and 66¼° s	℔ lb.	3¼—3⅜
Mixed, 7 parts 49° n, 4 parts 66¼° s		4⅛—4¼
Mixed, equal parts, 49° n, and 66° s		3 —3¼
Mixed, equal parts, 48° n, and 66° s		2⅞—3

Alkalies.—For caustic soda the demand has been somewhat better, but there has been no important change in the condition of the market, prices remaining about the same as before quoted by us. The spot supply is now larger. The offerings of lots to arrive are at more favorable terms, while import contracts are solicited at prices considerably under quotations for spot lots. For 60 per cent. $2.80@2.90 is the nominal figure, while 70 per cent. is quoted at $2.55@2.60. The demand has been largely for 76 per cent., for which there is a wide range, according to brand, the extremes being $2.65@3.00. The quotations for lots from store are :

Caustic Soda, 60 ℔ cent	℔ cwt.	$2 80 —2 90
Caustic Soda, 70 ℔ cent		2 55 —2 60
Caustic Soda, 74 ℔ cent		2 50 —2 55
Caustic Soda, 76 ℔ cent		2 65 —3 00

October Production Report.

Reports of the stocks on hand at 6376 Bradford wells showed an average increase of 1.9 barrels to the well during October :

Time.	No. Wells.	Gross Stocks.	Average per well.
October 1, 1886	6,376	293,853	46.0
November 1, 1886	6,378	305,751	47 9
Difference	2	11,898	1.9

The number of wells in the Bradford field connected with the pipe lines on the first of November is estimated at 14,000. Estimating the entire Bradford region on the basis of 1.9 barrels increase, the total increase in stocks at wells during October was 26,600 barrels, a daily average of 858 barrels. Adding the increase in stocks to the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for October is as follows:

	Barrels.
Average Daily Pipe Line Runs	24,596
Average Daily Increase of Stocks at Wells	858
Bradford's October Production, estimated	25,454
" September " "	26,674
Average Daily Decrease	1,220

THE ALLEGANY FIELD.

Stocks from 965 wells in the Allegany field show an average increase of one barrel to the well, during October. With 4100 wells in the field on the first of November, the total increase in stocks amounts to 4100 barrels, a daily average increase of 132 barrels for the month of October. Adding this increase to the pipe line runs, 5885 barrels, the sum 6017 represents Allegany's daily yield for October. The estimated production for September was 5994 barrels a day.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Oct. 1.	No. Wells Nov. 1.	Average per well Oct. 1.	Average per well Nov. 1.
Clarendon and Tiona	232	236	24	20
Cherry Grove	22	22	34	41
Cooper District	125	125	34	33
Lower Country	125	122	71	79
Miscellaneous	158	163	131	149

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for October and September is as follows:

Field.	October. Barrels.	September. Barrels.
Bradford	25,454	26,674
Allegany	6,017	5,994
Outside Runs	46,640	45,560
Total	78,111	78,228

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, averaged 1619 barrels a day in October, 1672 barrels a day in September and 1945 barrels in August. The Lima runs were 4112 barrels a day in October, 2348 barrels a day in September and 1613 barrels in August.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39,039	11,547	13,793	19,549	16,613	65,018	69,445
June	33,753	35,279	11,108	13,499	19,977	18,330	64,838	67,108
July	34,031	34,537	11,218	12,345	20,870	16,758	66,119	63,640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32,976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,089	22,762	19,228	63,876	67,981
November	31,789	35,026	8,642	12,678	23,557	18,433	63,988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32,378	7,196	11,607	19,800	18,561	54,047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33,922	7,049	11,547	21,225	19,549	55,505	65,018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10.384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63.876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,267
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,585	27,051	6,651	7,196	22,603	19,800	57,840	54,047
March	27,947	26,444	6,137	7,342	25,680	19,923	59,764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505
June	27,860	29,272	6,554	7,463	40,040	21,559	74,454	58,294
July	27.046	30,309	6,350	7,139	40,491	19,273	73,887	56,721
August	26,695	29,858	6,200	7,065	43,762	22,830	76,657	55,531
September	26,674	30,205	5,994	7,186	45,560	21,269	78,228	58,660
October	25,454	30,180	6,017	6,747	46,640	23,161	78,111	60,088

The Refined Market.

The movement in refined throughout the month of October was quiet and prices ruled an ⅛ of a cent less than when crude occupied a relatively lower position. The quotation for 70° Abel test was marked down from 6¾c to 6⅝c, on the 11th, and the latter figure remained unchanged for the remainder of the month. Russian competition in the European markets is regarded as likely to keep American refined within a few points of the present quotations, and exercise a greater or less depression upon our crude, no matter how much the statistical situation of our product may improve

The exports of refined, crude and naphtha, from all ports, from January 1 to October 30 have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	4,736,632	7,267,455
Philadelphia	126,104,472	127 903,295
Baltimore	13,384,229	9,504,819
Perth Amboy	4,850,046	--------
Total	149,075,379	144,675,569
From New York	323,913,866	315,312,457
Total exports from United States	472,989,245	459,988,026

In refined for the home trade the business has been large and the demand improves as the season advances. Quotations are 8½@9c New York State legal test, 7¼@7⅜c for 110° test, 8¼c for New York city 110° flash, and 9½c for New York city 150° water white. Western lots are offered at 7¼c for 110° test Standard white, 7¾@8c for 120° test Standard white, 8½@9c for 130° test Standard white, 9@9¼c. for Standard test and 9¼@9⅜c. for 150° test water white. Western naphtha 68° to 72° test is quoted at 7¼@7¾c. delivered in New York. The demand for refined in cases has continued light, with quotations unchanged at 8½ to 9⅝c., according to brand. The clearances for October in this class of goods to China and the East amounts to 622,514 cases, a decrease of 250,048 cases from the same month in 1885. The total clearances up to October 31 are 10,169,100 cases, an increase of 1,675,503 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 31st of October, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	2,243,857	2,320,799
JAPAN	1,286,721	1.694,519
INDIA	3,325,815	2,370,485
JAVA, SINGAPORE, ETC.	3,312,707	2,107,794
Total October 31	10,169,100	8,493,597
Total September 30	9,546,586	7,621,035
Clearances for October	622,514	872,562
Clearances for September	283,751	658,336
Clearances for August	549,916	718,533
Clearances for July	1,028,427	846,668
Clearances for June	1,419,352	1,116,314
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	10 169,100	8,493,597

REFINED QUOTATIONS FOR OCTOBER.

	New York.	Philadelphia.	Baltimore.	London and Liverpool.	Bremen.	Antwerp.
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	6¾	6¾	6¾	5½	6.20	15⅜
2	6¾	6¾	6¾	5⅝	6.20	15⅜
3						
4	6¾	6¾	6¾	5½	6 20	15⅜
5	6¾	6¾	6¾	5⅝	6.20	15⅜
6	6¾	6¾	6¾	5⅝	6 25	15⅞
7	6¾	6¾	6¾	5⅝	6.30	15⅞
8	6¾	6¾	6¾	5⅝	6 30	15⅞
9	6¾	6¾	6¾	5⅝	6.30	15⅞
10						
11	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
12	6⅝	6⅝	6⅝	5⅝	6 30	15⅞
13	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
14	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
15	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
16	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
17						
18	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
19	6⅝	6⅝	6⅝	5⅝	6.30	15⅞
20	6⅝	6⅝	6⅝	5⅝	6.30	15¾
21	6⅝	6⅝	6⅝	5⅝	6.30	15¾
22	6⅝	6⅝	6⅝	5⅝	6.30	15¾
23	6⅝	6⅝	6⅝	5⅝	6.30	15¾
24						
25	6⅝	6⅝	6⅝	5⅝	6.30	15¾
26	6⅝	6⅝	6⅝	5⅝	6.25	15¾
27	6⅝	6⅝	6⅝	5⅝	6.25	15¾
28	6⅝	6⅝	6⅝	5⅝	6.25	15¾
29	6⅝	6⅝	6⅝	5⅝	6.25	15¾
30	6⅝	6⅝	6⅝	5⅝	6.25	15¾
31						

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	OCT., 1886.	SEPT., 1886.
National Transit Co	1,596,431.00	1,658,635 77
Tidewater	191,669.16	201,314.98
Octave Oil Co	2,969.58	2,922.67
Shaffer Run	--------	1,864.50
Excelsior Pipe Line	25,493.24	--------
Pittsburgh Pipe Line	8 384 62	48,425.63
Southwest Pennsylvania	503,595.02	426,503.87
Total	2,328,542.62	2,339,668.42
Daily average	75,114.28	77,988.95

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	OCT., 1886.	SEPT., 1886.
National Transit Co	2,071,388.17	1,779,639.63
Tidewater	214,722 54	210,436.41
Octave Oil Co	2,418.17	3,037.90
Shaffer Run	--------	--------
Excelsior Pipe Line	7,667.31	--------
Pittsburgh Pipe Line	36,438.69	46,279.44
Southwest Pennsylvania	324,644 32	277,087.83
Total	2,657,279.20	2,316,481.21
Less oil transferred between lines	289,072.77	218,526.56
Total	2,368,206.13	2,097,954 65
Daily average shipments	76,393.76	69,931.82

In the above shipments only the oil delivered to refiners is included.

Daily excess of shipments over runs, October	1,279.48
Daily excess of runs over shipments, September	8,057.13
Daily excess of runs over shipments, August	11,931.56
Daily excess of runs over shipments, July	5,557.20
Daily excess of runs over shipments, June	4,793.41
Daily excess of runs over shipments, May	3,967.06
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561.80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68
Daily excess of shipments over runs, December	7,677.75
Daily excess of shipments over runs, November	2,790.41
Daily excess of shipments over runs, October, 1885	5,064.07

NET STOCKS.

PIPE LINE.	OCT. 31, 1886.	SEPT. 30, 1886.
National Transit Co	31,455,767.48	31,667,864.17
Tidewater	1,357,603.24	1,364,004.28
Octave Oil Co	4,354 24	4,168 44
Shaffer Run	--------	24,531.64
Excelsior Pipe Line	20,509 87	--------
Pittsburgh Pipe Line	--------	17,212.48
Southwest Pennsylvania	738,715.65	559,764.95
Total	33,594,162.96	33,576,950.48

Stocks decreased October	60,595.48
Stocks increased September	214,073.99
Stocks increased August	362,652.56
Stocks increased July	188,510 62
Stocks increased June	216,583.97
Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174 57
Stocks decreased February	436,146 60
Stocks decreased January, 1886	255,156 35
Stocks decreased December	255,320.70
Stocks decreased November	109,185.52
Stocks decreased October, 1885	184,398 91

	RECEIPTS.	DELIVERIES.
Daily average October	75,114	76,394
Daily average September	77,989	69,932
Daily average August	76,880	64,949
Daily average July	74,880	69,323
Daily average June	75,811	71,017
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	66,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244
Daily average December	61,298	68,976
Daily average November	58,871	61,661
Daily average October, 1885	61,070	66,134

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

SUMMARY of the Statements of the National Transit Company for October and September:

	October. Barrels.	September. Barrels.
Receipts from all sources	1,885,503.77	1,900,084.06
Deliveries	2,089,153 67	1,779,639.63
Gross stocks end of month	34,684,202.19	35,230,699.10
Sediment and surplus	3,228,434.71	3,562,834.93
Total liabilities end of month	31,455,767.48	31,667,864.17
Outstanding acceptances	24,836,576.05	25,110,087.78
Credit balances	6,619,191.40	6,557,776 39

The above "receipts from all sources" for October were made up as follows:

Runs from wells	1,596,431.00
Received from other lines	289,072.77
Total	1,885,503.77

The above "receipts from all sources" for September were made up as follows:

Runs from wells	1,658,635.77
Received from other lines	218,526.56
Received in iron tanks	22,921.73
Total	1,900,084.06

OCTOBER OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN OCTOBER, 1886.

Allegany Field.

Twp. Owner Barrels.
Scio, 51, (Norton) Duke & Norton No 66. 5
" 35, (York) Allentown Oil Co dry
Alma, 37, Perrin & Young No 25 6
Alma, 81, Shirley & Hochstetter No 6 3
" 81, " No 7 3
" 86, Brown & Thornton No 5 3
Wirt, I, (Riley Allen) Emp Gas & Fuel Co No 2 gas
" 55, (J W Jordan) P M Shannon & Co No 1 dry
" 60, (A Jordan) Lester, Jordan & Co No 3 6
" 61, (Doyoe) Natl Transit Co No 77 (for gas) gas
" 61, (Goodell) C Phillips No 3 6
Bolivar 15, Kelly & McMurray No 7 5
" 64, McDongal Oil Co 7
Genesee, 11, (Little Genesee) Emp Gas & Fuel Co, Limited (for gas) gas
Clarksville, 3, (M Jordan) M Jordan No 2 4
" 5, (Lane) Barton, Ackerly & Co No 21 10
" 5, (Wetherbee) Harris, Johnson & Co No 10 10
" 5, (Congdon) Penny & Warner 10
" 11, (Keller) Angell Oil Co No 3 10
" 13, (Wixon) Wixon Oil Co No 3 10

Wells completed 20
Production 98
Dry 5

Bradford Field.

East and West Branches.

Dent, Whitney & Wheeler No 47 8
Dent, P C L & P Co o 71 8
Hatfield, Wesley Chambers No 3 5
King, Smith Chemical Co (for gas) gas
Brown, Wood & Young No 7 3
Brown, Wood & Young No 8 3
Brown, C K Book No 6 3
Wagoner, W C Patterson & Co No 9 5

Kendall Creek.

Melvin, P C L & P Co No 92 6

Foster Brook.

E T Co, E T Co No 41 6
C B & H, Geo Carson 5

Indian Creek.

Weston, J L McKinney & Co No 3 6
" Murphy, Hogan & Williams No 12 6
Shattuck, Bussell & Johnson No 7 6
" " No 8 6
Dodge, T Jennings No I 5

Kinzua.

Warrant 3076, Union Oil Co No 67 10
Lot 136, George Tait 8

Miscellaneous.

Ceres, (Steinrod) Ceres Gas Co (for gas) dry

Wells completed 19
Production 99
Dry 2

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Willie Run, Smith, Bright & Co No 2 5
White, Morse & Collins No 2 12
" " No 3 10
Richardson, T G Phillips 2

Warren, etc.

Willie, Beatty & Pickett 2

Wells completed 5
Production 31
Dry 0

Clarendon.

55, O W Beatty & Bro No 51 6
104, O'Donnell, Hill & Co 2
105, Tucker & Co No 2 6
463, Neill & Lammers No 8 5
531, S Short & Son No 10 5
531, " No 11 6
531, Keegan, Sage & Co No 7 6
556, J A Waterhouse No 16 5
556, " No 17 6

Wells completed 9
Production 47
Dry 0

Tiona.

83, Fertig, McKinney & Co 5
83, " 6
202, E O Emerson gas
240, H B Beatty & Co No 20 5
28, L Kraeer & Co No 10 6
284, Hackett & Shirley No 7 5
321, Horton, Crary & Co No 6 3
321, Pickett & Stone No 7 6

Wells completed 8
Production 36
Dry 1

Cooper District.

407, Summit City Co dry

Wells completed 1
Production 0
Dry 1

Balltown.

5214, James Welsh No 8 20
5214, " No 9 5

Wells completed 2
Production 25
Dry 0

Kane.

341, Forlorn Hope Oil Co No 1 dry
344, Trea & Mallory No 1 20
38, Boyer, Caldwell & Co No 10 20
380, " No 11 20
380, Boston Oil Co No 3 25
380, " No 5 20
381, " No 13 20
381, " No 14 20
381, " No 15 20
381, " No 17 20
381, " No 20 20
381, " No 21 25
281, " No 22 25
382, Rathbone & Mallory No 5 12
382, " No 6 10
383, " No 1 15
383, " No 2 8
384, (Donaldson) Shirley, H & Co No 10 20
384, " " No 11 20
384, " " No 12 25
384, " " No 13 25
385, P T Kennedy No 2 15
385, " No 4 10
420, Coast & Sons No 26 15
421, (Mallory & Co) (S H & Co) No 14 20
421, (King) " No 8 25
3767, Craig & Cappeau No 28 35
3767, " No 35 25
3775, Andrews No 6 10
3775, Thos Griffiths No 10 20

Wells completed 30
Production 565
Dry 1

Grand Valley.

Hunter, L B Wood & Co No 12 15
Gibbs, " No 3 12
Sam Fisher, " No 4 10
J W Fisher, " No 2 10
Merritt, Miller & Crippens No 15 12
" " No 16 10
Peterson, " No 6 10
" " No 7 10
186, W B Benedict & Co No 9 12
186, " No 10 10
186, Fertig & Henne No 9 10
186, (Campbell) Holman & Hopkins No 8 4
197, (Blakeslee) Tew Bros & Co No 7 10
Nason, D Emery & Boyer No 10 5
" " No 11 5
196, Bovee & Duck No 9 10
196, " No 10 10
195, (Emerson) W W Hague No 7 8
Carpenter, W J Jackson & Co No 5 10
" " No 6 10
150, Fertig & Lord No 3 12
150, " No 4 10
185, (Brenn) John Brenn No 4 3
197, Bell & Hazeltine No 8 8
151, Cadwallader & Co No 1 3
150 and 185, John J Carter No 11 10
150 and 185, " No 12 12
150 and 185, " No 16 10
235, Crippens & Phillips No 3 5
151, (Lackey) Southwest Oil Co No 6 5
Putnam, Wayne Oil Co No 5 8
Philtract, Holman & Hopkins No 2 15
" " No 3 12
Spring Creek, (C C Gilson) M Stewart No 2 2

Wells completed 34
Production 300
Dry 1

Miscellaneous.

3664, S B Hughes & Co No 2 4
3664, Clark & Foster dry
367, M J Feeley & Co No 2 dry
2032, Armstrong & Co 2
5134, (Forest) Roth & Cornwall dry
2-24, " Alshouse No 3 gas
Jefferson Co, Brookville Gas Co dry
234, (McKean) Pennsylvania Gas Co gas
Dunns Eddy, Parker & Nelson dry
York Hill, Jonathan Watson dry
2695, National Transit Co No 17 gas
2676, " No 22 gas
2723, " No 25 gas
2676, " No 26 gas

Wells completed 14
Production 6
Dry 12

Lower Country.

Venango and Other Sections.

Farm. Operator. Barrels.
Hogue, Oil City Fuel Supply Co No 2 gas
Morrison, " No 1 gas
Opposite Reno, J Fry, Agent 5
Caldwell, (Oleopolis) Sargent dry
Hill, Kirkwood & Co 2
Kirkwood, Kirkwood, Barcroft & Co 6
Diamond, Dart & Craig No 12 7
Buchanan, J B Robinson 8
Griffin, Jas Purtell 5
Ken Hill, Wilson Bros dry
E Skinner, Newkirk dry

Tipperary.

Moore, Beers & Co No 5 15
" E & B F McCracken No 4 10
" " No 5 15
J Fox, Wesley Chambers No 2 5
M Fox, Judd & Kaufman No 1 5
Siggins, Taylor, Torrey & Murphy No 8 12
Stanley, Beeson & Co dry
Morrison, Salem parties dry

Tarkill.

Geo Hill, Taylor, Torrey & Murphy No 15 20
W H Hill, " No 5 20
" " No 6 25
" " No 7 30
Benton, Benton Oil Co No 9 25
" " No 13 10
Houser, I H Webb & Co No 3 20
" " No 4 20
" " No 5 20
" " No 6 25
" A P Dale & Co No 4 10
Kahle, Kahle Bros No 5 10
Benninger, Burke & Hurley dry
" Benninger & Myers No 2 10
" Columbia Gas Co No 1 7
" " No 2 20
Dolan, S P McCalmont No 2 gas
Lloyd lands, Barnum & Co dry
Sherard, McKeever & McPherson gas

Rockland or Red Valley.

Barten, Dale Bros No 4 5
Hetzler, Morgan & Co 6
" Hite & Co 6
Grant & Sheasley, W H H Piper 10

Bullion.

Kelley, Kelley dry
Simcox, McElree & Co 3

Vicinity Emlenton.

Leslie, Harvey Leslie 6
Dreibelbers, Morgan & Mull 8
Byrom Centre, (Robinson) John Doughterty 6
" " Maxwell & Middleton 8

Wells completed 48
Production 425
Dry 12

Clarion.

Buzza, McDowell & Crawford No 3 10
Amos Strutman, Pagett & Co 6
Jacob Black, Berlin & Sons 4
Edmunds, Urquhart & Lavens No 7 35
Wm Mong, Whitehill & Chambers No 5 est 10
Shreffler, Kerr & Coest 8
Exley, Zelles & Coest 5
Stumpner, Hess & Coest 8
Booth, Giles Bros & Howe dry
Mahl, Howe & Maxwell dry
Call, Irwin & Co 5
Inn Rock, Smith Bros dry
Mechanicsville, Clarion Gas Co gas
Egypt, Henry Ager 5

Freedom, (Hogue farm) Forsythe.....dry
Arthur Station, McMullen, Feeley & Co.dry
Graham, Whitehill & Co.....dry
Myers, John H Lee.....dry
Lloyd, Flynn & Ryder.....dry

Wells completed..... 19
Production..... 96
Dry..... 9

Butler and Armstrong.

Dulity, Ireland & Hughes No 8 est..... 30
Miller, Dennison & Fleegler No 7..... 40
Glenn, W P Turner & Co No 5..... 40
Hickey, Boyd & Co No 2..... 40
" " No 3..... 60
Murtland, Troutman Oil Co..... 20
Barnhart, Vensel, Larkin & Co..... 20
Wm Hickey, Fisher Oil Co..... 40
Chas Duffey, Forquer Bros..... 25
" Branch Creek Oil Co No 1. 20
F Miller, Seibert Bros No 7..... 40
Gillespie, Big Venture Oil Co..... 8
S H Critchlow, Phillips Bros No 2..... 50
Slater, Phillips Bros No 1..... 90
" " No 2..... 100
Railroad lot, Wm Semple Jr & Co No 2.. 15
Galesbaugh, Leidecker Bros & Co..... dry
Dickey heirs, Lockwood & Tabor.....dry
S H Critchlow, McJunken & Co..... 30
Markle, Lentz est..... 5
Schaffner, Butler Gas Co.....dry
McQuistion, Shenango Gas Co.....gas
Bortmas, Bowers & Co.....dry
Gillespie, Taylor & Co..... 10

Martinsburg.

Edmunds, Edmunds & Co..... 5
H & H Tract, Conley Oil Co.....dry

Thorn Creek.

Chas Morrison, Clark & McKinney No 4. 25
John Klingler, Iman, Waldron & Co.... 15
McLaughlin, Thorn Oil Co..... 18
Glenn, C A Hite & Co No 2..... 15
Petrolia, Hazelwood Oil Co..... 25

Wells completed..... 31
Production..... 786
Dry..... 6

Shannopin, Etc.

A P Morrow, Raccoon Oil Co & Solar Oil Co No 2.... 75
" " No 4.... 200
" " No 8.... 150
" " No 11... 200
" " No 12... 100
McCartney, Raccoon Oil Co No 3..... 75
" " No 4..... 50
Marks, " No 2..... 200
McAllister, " No 1..... 50
Stone, McFarland No 2..... 40
Thompson, P M Shannon No 7..... 300
Eachel, Chas Eachel..... 60
Johnson, Brown & Chartiers Oil Co.....gas
Twyford, Galey.....gas
Harper, Frederick & Calhoun.....dry
Scott, J Sharp McDonald & Co.....dry
McCoy, McCoy & Co est..... 75
Byers, Tomlinson & Co.....dry
Reed, Raccoon Oil Co.....gas
Farmington, W Va, E M Hukill.....gas

Wells completed..... 20
Production.....1575
Dry..... 7

Washington.

Weaver, Citizens' Oil & Gas Co..... 25
Barre, Forest Oil Co No 4..... 675
" " No 6..... 800
Hall, " No 3..... 10
" " No 4..... 10
Morgan, Union Oil Co No 3..... 55
Dye, Union Oil Co No 1..... 80
Wylie, A P Co No 2..... 20
" " No 3.....dry
Linn Coast Sons & Co No 3..... 60
Smith, Willets, Young & Chartiers Oil Co No 5.... 110
Cameron, Willets, Young & Chartiers Oil Co No 4.... 210
Munce, Willets & Son No 12..... 225
W J Munce, John McKeown No 7 est... 25
Shrontz, Nail City Oil Co.....dry
Price, Crocker & Co.....gas
Martin, Central Oil Co est..... 180
Hart lot, McKeever & Co.....dry
Donaldson, Robbins & Co.....gas

Wells completed..... 19
Production.....2485
Dry..... 5

DRILLING WELLS.

RIGS UP AND BUILDING OCTOBER 31, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
3,	Coyle & Simon (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old)	rig

New rigs..... 0
Old rigs..... 4
Drilling..... 0

Total..... 4

Alma.

3,	M J McMullan & Co No 5 (old).	rig
23,	Vance & Horton (old)	rig
26,	Willetts & Elliott (old)	rig
51,	Sawyer & Co (old)	rig
120,	McCalmont Oil Co No 10 (old)	rig

New rigs..... 0
Old rigs..... 5
Drilling..... 0

Total..... 5

Wirt.

47,	(Voorhees) Applebee & Mix No 2 (old)	rig
47,	(J Jordan) McQueen & Co No 1.	drilling
48,	(Church) McNorton, Deming & Co No 2 (old)	rig
52,	(Jordan heirs) Empire Gas Co No 2	drilling
52,	(Jacob Jordan) Wilson & Johnston No 9 (old)	rig
55,	(Orson Witter) P M Shannon & Co No 1 (old)	rig
60,	(Alvah Jordan) J H Snow No 6 (old)	rig
60,	(Lawrence) Empire Gas Co (for gas)	300
60,	(M Jordan) Surprise Oil Co No 2	rig
60,	(Alvah Jordan) Cottrell & Co No 4	rig
61,	(Deyoe) National Tran Co No 78 (for gas)	rig
61,	(J Jordan) Ackerly, Barton & Co (old)	rig
61,	(Isaiah Jordan) Lester, Jordan & Co No 6 (old)	rig
61,	" " No 7 (old)	rig
62,	(Peterson) Limekiln Club No 4 (old)	rig
62,	(Latham) " No 1	rig
62,	(Peterson) Barton, Hammond & O'Neil No 6.	drilling

New rigs..... 4
Old rigs and shut down..... 9
Drilling..... 4

Total.....17

Bolivar.

12,	Wood & Co (old)	rig
15,	Kelly & McMurray No 8	drilling
23,	F C Streeter & Co No 12 (old)	rig
30,	Fritz & Lowry No 8 (old)	rig
30,	" No 10 (old)	rig

New rigs..... 0
Old rigs..... 4
Drilling..... 1

Total..... 5

Genesee.

14,	Merwin (old)	rig
22,	I Willetts No 14 (old)	rig
22,	" No 15 (old)	rig
22,	" No 16 (old)	rig
22,	" No 17 (old)	rig
22,	" No 18 (old)	rig
23,	Coughlin (old)	rig
29,	William Cranston (old)	rig

New rigs..... 0
Old rigs..... 8
Drilling..... 0

Total..... 8

Clarksville.

5,	(Lane) Lane Oil Co No 5 (old)..	rig
5,	" " No 6	drilling
5,	(Bradford) Barton, Ackerly & Co No 20	drilling
6,	(Seever) Ackerly, Barton & Co No 9 (old)	rig
6,	(Hamilton) Ackerly, Barton & Co No 23	rig bldg
20,	(Ernhout) " (old)	2 rigs
9,	Heuston & Brecht No 4 (old)	rig
9,	Merritt (old)	rig
3,	(A Jordan) Angell Oil Co No 3.	drilling
10,	(Swartwout) "	drilling

New rigs..... 1
Old rigs..... 6
Drilling..... 4

Total.....11

Miscellaneous.

Birdsall twp,	I Willets & Co	drilling
Mrs Grador,	(Allegany) Conroy & Johnston	rig

New rigs..... 1
Old rigs..... 0
Drilling..... 1

Total..... 2

Bradford Field.

East and West Branches.

Warrant 2263,	Van Vleck & Mitchell No 39	sand
Cary,	W H Duncan No 4 (old)	rig
Dent,	P C L & P Co No 72	rig
"	" No 73	rig
"	" No 74	rig
"	" No 75	rig
B O Co,	Western Oil Co No 7 (fishing)	sand
Mack,	Columbia Oil Co (old)	rig
"	Fisher Oil Co No 19 (old)	rig
King,	Carmen & Co No 2 (old)	rig
Brown,	Wood & Young No 9	drilling
Wagner,	W C Patterson & Co No 10	drilling
Cutting,	C C Kerr	rig
Paton,	McClure & Co (old)	rig
Hinchey,	McMurray Bros No 6 (old)	rig
Clark,	McCray Bros (old)	rig

Quintuple.

25,	O H Strong (old)	rig
44,	J W Humphrey (old)	rig
260,	E T Howes (old)	rig

New rigs..... 5
Old rigs and shut down..... 10
Drilling..... 4

Total.....19

Knapp's Creek.

Matthews,	C B Whitehead No 6 (old)	rig
Borden,	T P Thompson No 14	drilling
"	" (old)	2 rigs
Duke,	J West No 7 (old)	rig
"	" No 8 (old)	rig
Keating,	Forest Oil Co No 54 (old)..	rig
Erskine,	Doe & Smith	rig
Ellis,	Dr Chrisman (old)	rig
Taylor,	Eldred Gas Co No 5	drilling
Rixford,	Joseph Daily	rig

New rigs..... 2
Old rigs..... 7
Drilling..... 2

Total.....11

Foster Brook.

E T Co,	Kervin & Co No 10 (old)	rig
"	E T Co No 42 (old)	rig
C B & H,	Juter & Yager (old)	rig
"	Clark, Cooper & Co No 9 (old)	rig
"	Watson Oil Co No 48	drilling
"	Burns & Monroe (old)	rig
"	W W Brown	drilling

New rigs..... 0
Old rigs..... 5
Drilling..... 2

Total..... 7

Four Mile.

Van Campen,	Coldren & Vance (old)	rig
"	Jas K Van Campen No 3 (old)	rig
Dye,	Manhattan Oil Co No 5 (old)	rig

New rigs..... 0
Old rigs..... 8
Drilling..... 0

Total..... 3

Indian Creek.

North Branch,	J D Downing & Co (old)	2 rigs
Hamlin,	Miller & O'Dell No 4 (old)..	rig
"	Forest Oil Co No 40 (old)	rig
"	" No 41 (old)	rig
Weston,	Murphy, Hogan & Williams No 13	rig
Gale,	G N Moore No 7	drilling
"	" No 8	rig bldg
Shattuck,	Bussell & Johnson No 9	drilling
"	" No 10	drilling
"	" No 11	rig
Dodge,	T Jennings No 2	drilling
"	" No 3	rig bldg
"	McGilvray Bros	drilling
Shattuck,	R G Taylor No 16	drilling
"	" No 17	rig

New rigs..... 5
Old rigs..... 5
Drilling..... 6

Total.....16

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) rig
" 2263, " No 7 (old) rig
Bingham, lot 369, Bennett & Thompson No 11 (old) rig
" lot 477, Tucker & Rolfe No 3 (old) rig
" lot 517, Rose & McLeod No 2 drilling
" lot 585, Ass'ed Producers No 62 1800
" lot 540, J McKeown No 3 500

New rigs 0
Old rigs 4
Drilling 3
Total 7

Kinzua.

Warrant 2243, Emery Oil Co No 51 1800

New rigs 0
Old rigs 0
Drilling 1
Total 1

Miscellaneous.

2470, McKean Co, Andrews & Co drilling
Renovo, Renovo Oil & Gas Co 600
St Marys, St Mary's Oil & Gas Co 200
Near Galnes, Pa, Home Co rig

New rigs 1
Old rigs 0
Drilling 3
Total 4

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Morrison, Anchor Oil Co No 12 500
White, Morse & Collins No 2 sand
" " No 4 drilling
Weed, " No 5 rig
Willie Run, Smith, Bright & Co No 3 sand
Sugar Run, (Richardson) Sugar Run Oil Co No 6 drilling
Morrisons, (Sherard) Dr Van Scoy drilling
Hodge Run, (Rollins) Book & Co rig

Warren, Etc.

Hemlock, P M Smith & Co No 5 sand
" Law & McKelvey drilling
Kersberger, Brown Bros No 2 drilling
Clark, James Clark rig
North Warren, Sandford & Jamieson No 7 drilling

New rigs 3
Old rigs 0
Drilling 10
Total 13

Clarendon.

35, A J Thompson sand
35, Henderson & Murphy No 7 drilling
55, O W Beatty & Bro No 52 drilling
55, " No 53 rig
105, R I Shugert (old) rig
105, Tucker & Co No 3 rig
105, Hackett & Shirley No 6 sand
107, W B Roberts & Son No 20 (old) rig
463, Fred Hue No 2 (old) rig
531, S Short & Son No 12 drilling
556, J A Waterhouse & Co No 18 drilling
556, " No 19 drilling
556, " No 20 rig
556, " No 21 rig
558, Goal Bros No 1 (old) rig

New rigs 4
Old rigs 4
Drilling 7
Total 15

Tiona.

161, Ed O'Donnell drilling
165, McKelvey & Best No 15 rig
200, Bovee & Duck No 10 (old) rig
201, Mandell Oil Co rig bldg
201, Wesley Chambers rig bldg
240, W W Winger No 5 (old) rig
244, Horton, Crary & Co No 13 (old) rig
244, " No 20 (old) rig
244, " No 21 (old) rig
244, " No 22 (old) rig
284, Watson & Mitchell No 8 drilling
321, Pickett & Stone No 8 drilling

New rigs 3
Old rigs 6
Drilling 3
Total 12

Cooper District.

407, Shank & Stewart No 9 (old) rig
407 " No 13 (old) rig
3198, Halght, Agnew & Co No 6 drilling

New rigs 0
Old rigs 2
Drilling 1
Total 3

Balltown.

3194, Porcupine Oil Co No 39 (old) rig
3195, (Crisman) N F Clark No 14 (old) rig
Forest, Wheeler & Dusenbury rig
Fork Run, Kelley, Grandin & Co 1000
5214, James Welsh rig
5214, " rig bldg

New rigs 3
Old rigs 2
Drilling 1
Total 6

Kane.

341, Forlorn Hope Oil Co No 2 drilling
344, Treat & Mallory No 2 1500
344, " No 3 500
344, " No 4 400
344, " No 5 rig
344, " No 6 rig
344, " No 7 rig bldg
344, " No 8 rig bldg
345, Clinton & Swayne No 2 drilling
380, Boyer, Caldwell & Co No 13 drilling
380, Boston Oil Co No 4 500
380, " No 6 2000
381, " No 16 200
381, " No 18 500
381, " No 19 800
382, Rathbone & Mallory No 7 1000
420, Coast & Sons No 24 (old) rig
3767, Cralg & Cappeau No 39 1600
3767, " No 40 (old) rig
3767, Ass Producers & Craig & Cappeau No 13 2000
3767, Roy & Arcber No 7 300

New rigs 4
Old rigs 2
Drilling 15
Total 21

Grand Valley.

Merritt, Miller & Crippens No 10 (old) rig
" " No 17 300
Blakeslee, " No 8 (old) rig
" " No 9 (old) rig
Peterson, " No 8 rig
Zane, (187) Fertig & Wood No 12 drilling
Lot 186, W B Benedict & Co No 11 drilling
" 186, " No 12 rig
Lot 196, Bovee & Duck No 11 drilling
Carpenter, W J Jackson & Co No 7 sand
Putnam, Wayne Oil Co No 6 drilling
" " No 7 rig
Lot 146, Whaley & Zane No 3 drilling
" 149, (D Pet Co) G P Kepler No 16 (old) rig
" 150, Nelson Farrell No 8 drilling
" 151, Mitchell & Dibble drilling
" 151, Cadwallader & Co No 2 rig bldg
Lot 150, Fertig & Lord No 5 rig
" 150, " No 6 rig bldg
" 150-185, John J Carter No 20 drilling
Lot 238, J B Jennings & Grandin (old) rig
" 345, (Van Gilder) M M Boyles drilling

New rigs 6
Old rigs 5
Drilling 11
Total 22

Miscellaneous.

Cherry Grove, 683, McGrew Bros No 2 300
3779, Sill & O'Dell sand
Wilcox, Al Nickel & Co drilling
3671, J H Markham & Co (old) rig
2033, Clark, Foster & Co 300
3664, " rig
2026, S B Hughes & Co rig
193, Pennsylvania Gas Co rig
2565, C G Thyng drilling
3797, Coast & Sons rig
5192, Berry & Co sand
Hickory, Taylor, Torrey & Co rig
" Barnum & Leasure drilling
Sutton Hill, A F Fritts (old) rig
Youngsville, (McKinney) Scranton Oil Co (shut down) sand
" Rouse land, Scranton Oil Co rig
2695, National Transit Co No 20 drilling
2675, " No 23 drilling
2723, " No 24 sand
2684, " No 27 rig
2685, " No 28 rig bldg
2695, " No 29 rig
2684, National Transit Co No 30 drilling

New rigs 9
Old rigs 3
Drilling 11
Total 23

Lower Country.

Venango and Other Sections.

Sage Run, Beers & Son No 3 (old) rig
Benninghoff, Oil City Fuel Supply Co No 6 sand
Benninghoff, " No 7 drilling
600 acres, " No 2 360
Swarms, " 100
McBride, Thomas Smith (old) rig
Kaufman, A P Dale No 9 (old) rig
" Judd & Geiser drilling
Osmer, Galbraith & Parker (old) rig
Mt Hope, Dr Galbraith drilling
Slab Furnace, S P McCalmont (old) rig
Baltimore lands, (Oleopolis) Sargent drilling
Steele, John Waits drilling
Curtis, Thomas Smith No 3 500
Blood, P Bankson 300
John McClintock, John Harsh rig
Buchanan, J B Robinson rig
Baum, W L Gage 500
Columbia, Columbia Oil Co 500
" Grasser & Co sand
Blood, Wratten & Co rig
Kirkwood, Kirkwood & Co rig
Holiday Run, B F Brundred drilling
East Sandy, (Lloyd) Owston & Co drilling
Titusville, lot 87, (Tubbs) Porter & Gilmor drilling

Tipperary.

Moore, Beers & Co No 3 (fishing) 700
" " No 6 600
J Fox, " No 2 500
" E & B F McCracken No 6 sand
" " No 7 rig
A Moore, A P Dale No 2 rig
" " No 3 rig
" I S Gibson & Co No 2 sand
J Fox, Wesley Chambers No 3 drilling
M Fox, Judd & Kaufman No 2 drilling
" Niece & Co rig
Reese, Sam Reese & Co No 1 sand
Sggins, Taylor, Torrey & Murphy No 4 200
Saddler, Riddle & Lynch (fishing) 600
J Stanley, Duncan & Co sand
T S Hazlitt, Deitrich & Warfield 700

Tarkill.

Webb, Taylor, Torrey & Murphy No 17 sand
Benton, Benton Oil Co No 14 rig
Houser, I H Webb & Co No 7 sand
" " No 8 800
" " No 9 rig
" " No 10 rig
Houser, A P Dale & Co No 5 drilling
" " No 6 rig
Benninger, Columbia Gas Co No 3 rig
Wm Huff, J J Fisher drilling

Rockland or Red Valley.

Hetzler, Leckey & Foster No 6 sand
Dale, Dale Bros No 2 drilling
John P Bisbop, Burton & Co rig
Jolly, Morgan & Co No 3 rig
J Campbell, Vensil & Co drilling

Nickleville.

Watson, Watson Bros rig bldg
Wicks, W H H Piper rig
" Goodrich & Salisbury drilling

Vicinity Emlenton.

D Russell, Baum & Co (old) rig
W P Grant, J V Ritts (old) rig
Sandy Point, Perrine drilling
Clintonville, Nelson Hovis drilling
Davis Corners, (Wellsby) L M Hale & Co rig bldg

Bullion.

Surena, Hoffman & Co drilling
Hovis, Hovis & Co rig
Baker, Baird rig
Anderson, Kingsley rig

New rigs 21
Old rigs 7
Drilling 40
Total 68

Clarion.

Berlin, Berlin & Sons No 14 (old) rig
" " No 15 (old) rig
John Henel, Koch Oil Co No 8 (old) rig
Lloyd, Dr Metzger (old) rig
Shreffler, McCallom & Co (old) rig
Shippen, John J Carter No 5 rig
Edwards, Urquhart & Lavens No 8 rig bldg
Smith, Oakshade Oil Co 500
Wagner & Curl, J V Ritts (old) rig
Heasley, Heasley & Co (old) rig
Kiser, Robert Campbell 300
Brown, J V Ritts (old) rig

Mahl, Atwater & Co 800
" D O White & Co 800
Kiser, Kiser & Co ..... sand
Cherry Run, Beson & Co (for gas) .. 600
Cors ca, John Deitrich & Young .... drilling
McDowell, McKinney Bros 800
Wagner & Curl, Wagner & Hahn (old) .... rig
Amos Pollard, Prospect Oil Co 300
McCleary, McCleary ..... drilling
Gloss, Gloss 600
Mahl, Smith, Yonkers & Corlett .... rig bldg
John Logue, Logue ..... drilling
Mahoning Creek, McElrary 1200
Booth, P F Kribbs 500

New rigs 8
Old rigs 9
Wells drilling 14
Total 26

Butler and Armstrong.

McGahey, Hunter & Cummings .... rig
Brady's Bend, " .... rig
Miller, Dennison & Fleegler No 9 .. 1000
" " " No 10 .. rig
F Miller, W G Crawford & Co (old) .. rig
Hickey, Boyd & Co No 4 ..... rig
" " No 5 ..... rig bldg
Jos Herlrick, Seibert Bros ..... drilling
Murtland, Troutman Oil Co No 6 ... sand
" " No 7 ... rig
Brownfield, Richard Jennings (old). rig bldg
Jenny Boyle, Showalter Bros & Hartman No 4 1300
" " No 5 900
" " No 6 400
" " N 7 800
Geo Rogers, W S Guffey & Queen No 1 (fishing) .... near sand
Wm Hickey, Fisher Oil Co No 2 800
" " No 3 300
" " No 4 100
" " No 5 100
" " No 6 .... rig bldg
Chas Duffey, Branch Creek Oil Co. rig
" McBride & Campbell (gasser) 1500
Houghton, Phil Brady & Co 800
Thomas Rogers, J Hartman ..... rig
Fataman, Campbell & Co ..... rig
Hildebrand, E A Rider ..... rig
Hickey, Brady & Simpson No 1 800
" " No 2 ..... rig bldg
" " No 3 ..... rig bld
P Boyle, Woodford & Co 700
O Neil, Holland, Black & Co ..... rig
J Fredrick, Campbell & Co ..... drilling
Chas Duffey, Hoch & Co (old) ..... rig
Glenn, C A Hite & Co No 3 ..... sand
Gillespie, Big Venture Oil Co No 2 . rig bldg
Slater, Phillips Bros No 3 300
John Dickey, Phillips Bros 1500
Dickey heirs, Fisher Oil Co ..... sand
Mars, (Marshall) Clark, Hoag & Co . 1500
" Belford, R W Miller ..... rig
Callery, (Widow Croft) Breakneck Oil Co 1000
Butler, Sam Boyd 500
Chas Duffey, McBride & Campbell drilling
Wilds, Reep & Sutton No 1 300
" " No 2 600
" " No 3 ..... rig
" Bott & Story 300
Coyle, Bott & Story 300
Woodford, Shenango Gas Co (for gas) 200
Butler, Mrs Edwards (for gas) ..... drilling
Dininger, Butler Gas Co (for gas) .. drilling
Duffey, McCafferty & Co ..... rig bldg
McCrea, McGuire & Co ..... rig bldg
McJunkin, Quilter & Co ..... rig bldg
Burr, P Smick, No 3 ..... rig bldg
Broell, Burchfield & Denniston ..... rig
Held, Phillips Bros ..... rig
Spithaller, Phillips Bros No 1 1000
" " No 2 800
" " No 3 600
J C Critchlow, Leidecker 700
Held, Leidecker 300
S H Critchlow, Phillips Bros No 3 .. rig bldg
McCalmont, Phillips Bros No 13. .. rig bldg

St. Joe.

Nohar, Christie & Co ..... drilling
Bippus, Phillips Bros 500
J Ball, P C L & P Co ..... rig bldg
August, " ..... rig bldg

Martinsburg, Etc.

Arch Kelley, Butler & Co 600
J S Cooper, Cooper ..... rig bldg
R H Campbell, Campbell & Co ..... rig bldg
Harrison, W H Harrison (old) ..... rig

Thorn Creek.

Maharg, J S McKelvey & Co No 4 .. 1000
Bulford, Iman, McBride & Campbell (fishing) 1450
Burton, Farmers Oil Co No 2 1650
Maharg, Bolard & Smith No 3 fishi'g 1200
Burton, Iman, McBride & Campbell No 2 1500
" Thayer & Crosby No 2 1400
Burton, Thayer & Crosby No 3 .... drilling
" " No 4 .... rig bldg
Kerstng, McClung & Co ..... sand
Hayes, Clark & Co ..... rig

New rigs 31
Old rigs 4
Drilling 48
Total 83

Shoustown, Etc.

Thos Pinkerton, J S McKelvy (old) rig
Charles Eachel, Raccoon Oil Co (old) .... rig
Hood, Raccoon Oil Co (old) ..... rig
A P Morrow, Raccoon Oil Co & Solar Oil Co No 1 .. 500
" " No 3 .. sand
" " No 5 fishing .. 700
" " No 9 .. 900
" " No 13 .. 300
" " No 14 .. rig
" " No 15 .. rig
Purdy, P M Shannon & Co No 2 .... rig
" " No 3 .... rig bldg
McCartney, Raccoon Oil Co No 5 ... 900
" " No 6 ... drilling
" " No 7 ... rig bldg
" " No 8 ... rig bldg
Stevenson, Kasson Oil Co No 2 ..... rig
" " No 3 ..... rig
Marks, Stevenson No 3 ..... rig
Jos Alexander Raccoon Oil Co No 2 sand
" " No 3 1100
" " No 4 rig
Wallace, " No 2 sand
" " No 3 1100
" " No 4 300
McAllister, " No 2 rig
Purdy, P M Shannon No 1 ..... rig
" " No 2 ..... rig bldg
Thompson, P M Shannon & Co No 2 1400
" " No 6 (fishing) 1420
" " No 8 1600
" " No 9 900
" " No 10 rig bldg
Alexander, Lovell & Rumsey (old) .. rig
Allegheny Co, Ash Say & Liggett .. rig
Economy, Economites ..... 2 drilling
Smith, J M Guffy & Co 1700
Davis & Duff Union Oil Co ..... drilling
Good, Guffy & Co (fishing) 600
Riddle Philadelphia Co ..... drilling
McGee, Vandergrift & Co ..... drilling
Robt McCoy, Raccoon Oil Co No 2 rig
Agnew, Jutte & Co ..... drilling
Harper, McGee & Cusick ..... drilling
Kennedy, McDonald & Co ..... drilling
Crafton, (Pan Handle) Thornburg . rig bldg
Gilmore, Galey No 2 600
A P Morrow, Raccoon Oil Co No 3 .. rig
Ferguson, Chartiers Oil Co No 1 200
Coolfarm, (Allegheny Co) Cosgrove & Co 100
Gibsonia, McGrew Bros ..... rig bldg
John Morrow, Raccoon Oil Co No 4 . rig
Neville Island, Dimick & Co 600

Georgetown, Greene County, Etc

Trimble, Fishel, Connor & Boyd (old) .... rig
Fordyce E M Hukill & Co No 1 (shut down) . 1360
Gregg, E M Hukill & Co No 1 (fishing) 2275
Girard, E M Hukill & Co No 1 (shut down) . 750
Girard, E M Hukill & Co No 2 (shut down) . 1060
Hathaway, E M Hukill & Co No 1 .. 1064
Mt. Morris, E M Hukill & Co .. sand
Longanecker, " (old) .... rig
Greene county, (Phillips farm) I Willets 1400
" (Ninevah) Johnston & Hamilton 600
Marshall Co, (W Va) Wheeling Natural Gas Co .... drilling
" " Rocklick twp, Wheeling Natural Gas Co .... drilling
Greene Co, Rich Hill twp, Wheeling Natl Gas Co. drilling
" Allegheno twp, " drilling
Moundsville, Craig & Cappeau ..... drilling

New rigs 21
Old rigs and shut down 8
Drilling 40
Total 69

Washington.

Gordon, P L & H Co No 6 150
I Wilson, Forest Oil Co (old) ..... rig
Johnson, " (old) ..... rig
Barre, " No 7 550
" " No 8 500
" " No 9 750
Barre, Forest Oil Co, No 10 850
" " No 11 600
" " No 12 ..... rig
Morgan, Union Oil Co No 2 fishing 1650
" " No 4 fishing 1620
Morgan, Union Oil Co No 5 1900
" " No 6 1950
" " No 7 200
" " No 8 ..... rig bldg
Wm Davis, " No 3 2150
" " No 4 1565
" " No 5 850
" " No 6 200
" " No 7 ..... rig
Taylor, Union Oil Co No 5 fishing .. 2358
" " No 6 1640
" " No 7 700
Linn, Coast, Sons & Co No 1 1500
" " No 4 1900
Clark, Thayer Oil Co No 6 300
Smith, Willets, Young & Chartiers Oil Co No 2 2130
" " No 4 fishg 2370
" " No 6 fishg 2150
" " No 7 900
Cameron, " No 3 800
" " No 7 fishg sand
" " No 8 700
Baker's Station, Dyer & Roberts fisg 1500
Munce Heirs, Willets & Son No 6 ... rig
" " No 11 (fishing) sand
" " No 13 .. sand
" " No 14 .. 1675
" " No 15 .. 1575
" " No 16 .. 1560
" " No 17 .. 2050
" " No 18 .. 800
" " No 19 .. 1350
" " No 20 .. 1900
" " No 21 .. 1600
" " No 22 .. 1100
" " No 23 .. rig
" " No 24 .. rig
" " No 25 .. rig
" " No 26 .. rig
" " No 27 .. 200
" " No 28 .. rig
McDonough, I Willets & Co 2000
College Park, Kiskadden & Co ..... rig
Andrews, Wilson, Brenneman & Weaver 2300
Parsell, Fisher Oil Co 1125
Wade, B B Campbell & Co No 2 2000
" " No 1 .... rig
Lizzie McGahey, Mascot Oil Co No 2 1600
T McGahey, " No 3 1800
" " No 4 1450
" " No 5 700
W J Munce, John McKeowu No 8 .. 1600
" " No 9 .. 1000
" " No 10 .. 450
" " No 11 .. 100
" " No 12 .. rig
Martin, John McKeown No 1 fishing 2405
" " No 2 2100
Quail, " No 1 2200
" " No 2 2100
" " No 3 1500
" " No 4 950
Coal Center, Hornbake (shut down) drilling
Fergus, Craig & Co No 1 ..... sand
Fair Grounds, Wheeling Oil Co No 2 1600
" " No 3 100
Martin, Central Oil Co No 2 1300
" " No 3 300
Wolf, Robbins & Co (old) ..... rig
Martin, Allen, Dyer & Co 1300
Linn, Manufacturers' Natural Gas Co 400
Taylor, Gallagan & Young 300
Wright, Chartiers Oil Co & F W Andrews No 1 1900
" " No 2 1550
" " No 3 1600
McNary, Allen & Co (old) ..... rig
Pease, Marshall Oil Co 850
Wm Thome, F W Andrews & Connors & Fishel No 1 . 1450
" " No 2 . 1300
Wm Thome, Associated Producers No 3 800
" " No 4 100
" " No 5 200
" " No 6 800
" " No 7 600
John Murdock, Millers Oil Co (old) rig
John on lot, Colton & Co (shut down) 650
Boyce Station, Philadelphia Co ..... drilling
Wylie, Munhall & Co No 3 2000
Van Kirk, Caldwell & Co No 1 2000
McKean " No 1 1350
McCracken, Reed & Co (old) ..... rig
Leyda, F J Clemenger & Co (old) .. rig
Hoffman, Barnes (old) ..... rig bldg
Montgomery, McKinney & Co & Robbins No 3 1850
Watson, Butler & Co ..... rig
Cannonsburg, Manufacturers' Natural Gas Co ... 2 drilling
Bridgemill, Allegheny Co, Robbins & Co .... drilling
Wallace, Munhall & Co ..... drilling
O C C Pollock, C M Reed & Co ..... rig bldg
Niles, Reed & Co ..... rig

New rigs 15
Old rigs 10
Drilling 87
Total 112

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE.	Oct. 16, 1886. Barrels.	Sept. 18, 1886. Barrels.
Seven Continental Ports	1,237,561	1,315,733
London	189,301	185,549
Trieste	------	29,683
Total Stocks afloat and ashore	1,426,862	1,530,965
Decrease in stocks since Sept. 18	104,103	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS OCTOBER 16, 1886.

PORTS.	Stocks week ending Oct. 16.		Stocks afloat week ending Oct. 16.		Loading. Week ending Oct. 16.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	125,074	88,546	53,500	77,655	44,900	23,100	223,474	189,301	176,393	85,348	157,145	167,560
Trieste	22,659	------	------	------	------	------	22,659	------	------	------	------	------
Bremen	420,367	173,812	23,864	24,852	26,500	25,200	470,731	223,864	202,145	166,997	229,848	204,561
Hamburg	146,443	149,346	82,977	67,734	25,300	39,200	254,720	256,280	391,465	349,567	425,864	354,886
Antwerp	125,464	171,934	28,597	64,956	15,500	66,200	169,561	303,090	297,576	262,742	279,072	251,508
Rotterdam	60,613	117,503	28,597	86,418	12,000	38,000	98,363	191,921	146,838	212,837	155,222	177,273
Amsterdam	30,220	42,852	25,750	82,375	8,000	------	48,792	75,227	77,958	67,870	75,109	92,496
Stettin	107,474	65,963	15,253	72,269	------	------	122,727	138,232	196,749	175,115	147,687	125,945
Danzig	25,944	25,567	------	17,380	4,000	6,000	29,944	48,947	41,046	30,201	24,468	25,479
Total	916,525	746,977	187,013	315,984	91,300	174,600	1,194,838	1,237,561	1,353,777	1,265,329	1,337,270	1,232,148

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,524,152	1,225,585	916,525	746,977
Total afloat, " "	308,954	320,794	187,013	315,984
Total loading	224,700	282,800	91,300	174,600
Total	2,056,806	1,829,179	1,194,838	1,237,561
Afloat and loading for direct Continental Ports	----	27,700	------	------
" " " Baltic Sea, exclusive Stettin and Danzig	10,700	23,800	4,300	27,200
" " " Total Continental Ports	2,067,506	1,880,679	1,199,138	1,264,761
" " " Total London	461,107	241,967	223,474	189,301
" " " English harbors, exclusive London	136,300	207,000	165,000	99,400
Grand total	2,667,913	2,329,646	1,588,212	1,553,462

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, SEPTEMBER, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., OCTOBER 12, 1886.

CUSTOMS DISTRICTS	MINER'L. CRUDE		NAPHTHAS		ILLUMINATING.		LUBRICATING & PARAFINE OILS		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	------	------	------	------	622,646	56,549	7,596	1,413	------	------	630,242	57,962
New York, N. Y	4,940,607	321,121	1,582,199	143,014	31,509,334	2,421,905	1,322,294	274,627	254,352	12,253	39,608,786	3,172,923
Philadelphia, Pa	5,190,792	314,475	817,058	65,924	8,969,307	689,840	14,625	1,790	109,024	4,906	15,100,806	1,076,935
Baltimore, Md	5,075	250	--------	--------	826,324	57,153	--------	--------	------	------	831,397	57,403
Total for Sept., 1886	10,136,474	635,849	2,399,257	208,938	41,927,609	3,225,447	1,344,515	277,830	363,376	17,159	56,171,231	4,365,223
Total for Sept., 1885	10,728,816	826,204	2,125,539	159,179	47,219,965	4,249,430	776,361	172,627	212,466	13,772	61,093,147	5,421,212
Total for 9 months ending Sept 30 1886	54,584,106	3,672,826	8,956,513	785,320	257,952,732	29,060,801	10,013,141	1,931,803	1,730,476	95,463	433,236,968	35,546,213
Total for 9 months ending Sept 30, 1885	60,815,609	4,478,702	11,043,515	849,121	348,955,991	29,602,840	9,544,023	1,918,376	4,727,100	273,809	435,086,238	37,122,848

CRUDE QUOTATIONS FOR OCTOBER, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
F 1	62½	62⅝	62½	62½	62½	62¾	62½	62⅜	62⅜	62⅝	62⅜	62⅜	62⅜	62¾	62⅜	62½
S 2	62½	63⅛	62½	62⅞	62½	63¼	62½	62⅞	62½	63¼	62½	62⅞	62⅝	63⅛	62⅝	62⅞
M 4	63⅛	64⅝	63⅛	64¼	62	64⅝	63	64½	63⅛	64½	63⅛	64¼	63¼	64½	63⅛	64⅜
T 5	64⅝	65¼	63½	63½	64⅞	65⅜	63½	63½	65¾	65½	63½	63⅜	64¾	65⅜	63½	63½
W 6	63⅝	65⅞	63⅝	65¾	63⅞	66	63⅞	65⅞	63¾	65⅞	63¾	65⅞	63⅞	66	63⅞	65⅞
T 7	65¾	65¾	64⅝	64⅝	65⅝	65⅞	64⅝	64¾	64¾	65¾	64½	64⅝	65½	65⅝	64⅝	64⅞
F 8	64⅞	65⅛	64⅜	61¾	65	65¼	64½	64¾	64⅞	65⅛	64¼	64⅝	64⅞	65¼	64½	64⅝
S 9	65⅛	65¾	65	65½	65	65¾	64⅞	65½	65¾	65¾	61⅞	65⅜	65⅛	65¾	65	65⅜
M 11	65¾	65⅞	65	65⅛	66	66⅛	65	65¼	65⅝	66	64⅞	65	65⅝	66	65	65⅛
T 12	65¼	65¼	64¾	65¼	65⅜	65½	64¾	65¼	65⅛	65⅜	64½	65⅛	65⅜	65½	64⅝	65⅜
W 13	65⅜	65⅜	64⅝	64⅝	65½	65½	64⅝	64½	65½	65½	64⅝	64¾	65⅜	65⅜	64⅝	64⅜
T 14	64¾	65¼	61⅜	64½	64⅞	65¼	64⅝	64⅝	64⅞	65⅜	64½	64⅝	64¾	65¼	64⅝	64⅝
F 15	64¾	64⅞	64½	61½	64⅞	65	64½	61¾	64⅝	65	64½	64⅝	64⅝	64⅞	64½	64¾
S 16	64⅞	65½	64⅞	65⅜	65	65⅝	64⅞	65⅜	65	65½	64⅞	65¼	65	65⅝	64⅞	65⅝
M 18	66	66⅞	65⅝	66⅛	66	67	65⅝	66¼	66	67⅛	65½	66	66	67	65½	66⅛
T 19	65⅞	66⅜	65⅞	65⅞	65⅞	66⅜	65⅞	65⅞	65⅞	66⅜	65¾	65⅞	66	66⅜	65⅞	65⅞
W 20	66	66¼	65⅞	65⅞	65⅞	66¼	65¾	66	66	66¼	65¾	65⅞	65⅞	66¼	65⅞	66
T 21	66⅛	66¼	66	66	66¼	66⅜	66	66	66⅛	66⅜	65⅞	66	66¼	66⅜	66	66
F 22	66¼	66⅜	64¾	65	66⅛	66⅛	64¾	64⅞	65⅞	65⅞	64¾	64⅞	66	66	64¾	65
S 23	65	65⅞	65	65⅞	65	65⅞	65	65¾	65	65⅞	64⅞	65¾	64⅞	65⅞	64⅞	65¾
M 25	66¼	66¼	65¼	65¼	66	66¼	65⅜	65⅜	66⅛	66⅜	65¼	65¼	66	66¼	65⅜	65¼
T 26	65½	65½	64⅞	65½	65½	65⅝	64⅞	65⅜	65½	65½	64⅞	65⅜	65⅜	65½	64⅞	65⅜
W 27	65⅝	65⅝	65¼	65¼	65½	65½	65⅛	65⅛	65½	65½	65⅛	65¼	65½	65½	65⅛	65⅛
T 28	65⅜	66¼	65⅜	66⅛	65⅜	66⅛	65⅜	66	65⅜	66¼	65⅜	66	66⅛	66⅛	65½	65½
F 29	66¼	66¼	65⅛	65⅛	66½	66½	65⅛	65¼	66⅜	66⅜	65	65⅛	65⅜	66¼	65¼	65¼
S 30	65¼	66¼	65¼	66¼	65¾	66¾	65¼	66⅛	65¼	66¼	65¼	66	65⅜	66¾	65¾	66¼

ACME OIL COMPANY,

REFINERS OF PETROLEUM

MANUFACTURERS OF THE

CROWN ACME OIL

Prepared with Great Care for Family Use.

ABSOLUTELY SAFE,

AND THE

Best Illuminator in the World.

WORKS AT OLEAN, N. Y., & TITUSVILLE, PA.

MAIN OFFICE, 26 BROADWAY, N. Y.

GAS WELL PACKER.

(PATENT APPLIED FOR.)

For Use on Small Casing or Tubing

Does not require anchorage or any other support from below.

This Packer, when lowered to desired place in well, is set out by screwing the top flange down upon the rubber. The lower part of the Packer is held from turning while the top is being screwed down by the steel bars and wheels which allow the Packer to be lowered or raised but not to turn. The rubber is set out or opened up with great ease as the top flange turns on a bearing of brass and steel, doing away with all friction.

The cut represents a 3¼ inch Packer. They are made in three sizes—2 inch, 3 inch and 3¼ inch. When set out the Packer not only supports the weight of the small casing or tubing, but has stood a gas pressure upwards of 380 pounds to the square inch, equalling a total pressure of nearly five tons on the whole Packer.

———:(o):———

PUMPING PACKER

(PATENT APPLIED FOR.)

Especially adapted for old wells having leaky casing, or for shutting off salt or fresh water from any other sources.

This Packer slips easily on the tubing and rests upon a coupling. After the tubing is put in, a small pipe, ¾ inch or 1 inch, is lowered until it strikes the guide by which it is made to settle into the seat, provided with gasket, making a tight continuous joint. The weight of the small pipe sets out the rubber. This has the advantage over all other Pumping Packers that the tubing can be hung from the casing head. There can be no trouble in starting this Packer, as by lifting the small pipe the fluid above the Packer falls into the hole, thus taking off all pressure on the Packer. As the fluid runs in it can be pumped out before the tubing is pulled.

In case where the weight of the small pipe may not be sufficient to set out the rubber we put a screw joint and bearings above the rubber, by which the upper flange is screwed down in the same manner as in the Gas Well Packer; in other respects this Packer being similar to the one just described.

———:(o):———

FLOWING PACKERS.

Besides these specialties we make the common Flowing Cone Packer, the best and simplest Flowing Packer in use. We have improved our patterns, making the cone stronger and a longer jar. Our Packers have a small cone, thus combining the advantages of a Cone and Flange Packer.

———:(o):———

PRICES:

GAS WELL PACKERS.

2 inch	each,	$40.00
3 "	"	50.00
3¼"	"	50.00

PUMPING PACKERS.

Without Screw	each,	$15 00
With Screw	"	25.00

COMMON CONE PACKERS.

Each, $15.00. Dozen, $150.00.

Discounts to Dealers in Oil Well Supplies.

THE HOADLEY PACKER CO., Limited,

——MANUFACTURERS OF——

Gas, Pumping and Flowing Well Packers,

115 Washington Street, Bradford, Pa.

I. N. HOADLEY, Agent. F. H. NEWELL, Sec'y and Treas.

First National Bank

—OF—

BRADFORD, PA.

Capital, $150,000. Surplus, $30,000.

S. G. BAYNE, Pres't, J. M. FULLER, Vice-Pres't.

W. W. BELL, Cashier.

DIRECTORS:

T. W. BROWN, Vice-President Provident Life Trust Co., Philadelphia; C. M. FARRAR, of Farrar & Trefts, Buffalo; L. F. LAWTON, Cashier First National Bank, Olean, N. Y.; A. B. WALKER; F. W. DAVIS; C. C. MELVIN; J. M. FULLER; S. G. BAYNE, W. W. BELL.

STOCKHOLDERS.

Daniel O'Day, Joseph Seep, W. A. Pullman, Byron D. Hamlin, Henry Hamlin, A. G. Olmsted, L. Emery Jr., J. T. Jones, C. E. Hequembourg, L. E. Hamsher, Jno. McKeown, Robert C. Simpson, W. R. Weaver, F. D. Wood, Asher Brown, John Ley, P. L. Webster, Jos. Stettheimer, H. A. Marlin, Robert Long, I. W. Shirley, A. Hochstetter, Sheldon Jewett, P. W. Roth, James E. Blair. A. B. Smith, Kenton Saulnier, E. T. Howes, George H. Mills.

Transact general banking business. Make collections, sell drafts on Europe, and give prompt attention to all business entrusted to us at lowest rates.

Bradford National Bank

—OF—

BRADFORD, PENN'A.

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T. H. TOMLINSON, Cashier. C. A. MITCHELL, Asst. Cashier.

DIRECTORS:

P. T. Kennedy, W. C. Kennedy, R. J. Straight
O. F. Schonblom, H. F. Whiting.

TRANSACT A GENERAL BANKING BUSINESS.

Make collections; sell drafts on Europe; buy and sell United States bonds.

☞Prompt attention given to all business entrusted to us at the Lowest Rate of Charges.

PETROLEUM REAL ESTATE CO.

C. D. ANGELL,

OFFICE: 59 MAIN ST., BRADFORD, PA.

Buy, sell and lease all kinds of Oil Lands and City Property, Negotiate Contracts and do a General Commission Business. ☞Information carefully given. Address Lock Box 1275.

THE LIGHT RUNNING

SIMPLE STRONG

NEW HOME

SWIFT SURE

SEWING MACHINE

HAS NO EQUAL.

PERFECT SATISFACTION

New Home Sewing Machine Co.

—ORANGE, MASS.—

30 Union Square, N. Y. Chicago, Ill. St. Louis, Mo.
Atlanta, Ga. Dallas, Tex. San Francisco, Cal.

FOR SALE BY

C. H. DUBOIS, BRADFORD, PA.

Chicago & Atlantic R. R. Co.

TIME TABLE IN EFFECT SUNDAY, JULY 11, 1886 .

WESTWARD.

STATIONS.	No. 3. P c. Ex.	No. 5. Ch.L.Ex.	No. 1. Chi.Exp.
Marion Lv	10 55p.m.	2 00p.m.	8 25a. m.
Kenton	11 45p.m.	2 38p.m.	9 18a. m.
Preston	.....	.....	9 46a. m.
Lima	12 29p.m.	3 16p.m.	10 15a. m
Spencerville	.....	.....	10 43a. m.
Decatur	1 47a. m.	4 24p.m.	11 46a. m.
Huntington ..... Ar	2 43a. m.	5 12p.m.	12 50p.m.
Huntington Lv	2 48a. m.	5 18p.m.	1 05p.m.
Akron	.....	.....	2 14p.m.
Rochester	4 05a. m.	6 27p.m.	2 35p.m.
North Judson	5 02a. m.	.....	3 40p.m.
Crown Point	6 02a. m.	.....	4 54p.m.
Hammond	6 30a. m.	8 28p.m.	5 40p.m.
Chicago ..... Ar	7 30a. m.	9 30p.m.	6 45p m.

EASTWARD.

STATIONS.	No. 12. Atl. Ex.	No. 8. N Y. Ex.	No. 10. Mail Ex.
Chicago Lv	7 45p.m.	4 20p.m.	8 30a. m.
Hammond	8 48p.m.	5 18p.m.	9 30a. m.
Crown Point	9 16p.m.	5 40p.m.	10 02a. m.
North Judson	10 20p.m.	.....	11 25a. m.
Rochester	11 17p.m.	7 20p.m	12 35a m.
Akron	11 34p.m.	.....	1 00p.m.
Huntington ..... Ar	12 45a. m.	8 30p.m.	2 15 a.m.
Huntington Lv	12 50a. m.	8 45p.m.	2 30p.m.
Decatur	1 47a. m	9 35 .m.	3 30p.m.
Spencerville	2 44a. m.	10 21p.m.	4 43p.m.
Lima	3 08a. m.	10 40p.m.	5 11p.m.
Preston	.....	.....	5 40p.m.
Kenton	4 00a. m,	11 18.m.	6 08p m.
Marion ..... Ar	4 45a. m.	12 07p.m.	7 00p.m.

Trains run on Central Standard time.

Train 8 has Pullman Buffett Car, Chicago to New York daily, through without change

Train 12 has Pullman Buffett Sleeping Car to Boston and New York daily.

Train 3 has Pullman Buffett Sleeping Coaches from Boston and New York daily.

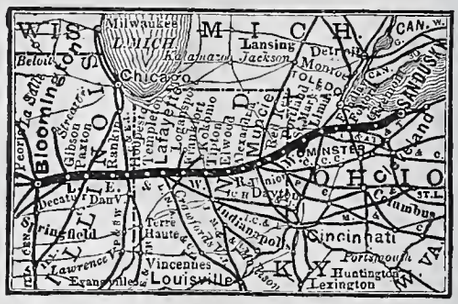
Train 5 has Pullman Buffett Sleeping Coaches from New York to Chicago.

All through passenger trains arrive at and depart from the new Dearborn Station, Chicago.

Passengers going East or West will find it to their advantage and interest to consult the agents of this company, who will give them all information in regard to rates and connections.

F. BROUGHTON, General Manager, Chicago.
S. W. SNOW, General Passenger Agent.

LAKE ERIE & WESTERN R'Y.



THE SHORT LINE BETWEEN THE EAST & WEST.

The shortest and most direct route, making immediate connections for passengers east and west.

CONDENSED TIME OF THROUGH TRAINS.

SEPTEMBER 20, 1886.

WESTWARD.		CENTRAL TIME.	EASTWARD	
		I. C. Ry		
10 15 p m	9 50 a m	Ar.....Sioux City.....Lv	4 50 p m	7 50 a m
7 40 a m	7 45 "	" .....Dubuque ..... "	6 30 a m	9 50 p m
2 18 "	9 15 a m	Lv....Bloomington ....Ar	3 17 p m	8 20 a m
		I B & W. R'y		
9 20 a m	7 15 p m	Ar...Council Bluffs...Lv	6 00 p m	9 10 a m
8 40 p m	6 20 a m	.....Burlington.....	2 35 p m	10 30 p m
5 10 "	7 45 a m	.....Peoria.....	7 10 p m	6 45 a m
2 55 "	5 20 a m	Lv....Bloomington ....Ar	9 25 p m	9 10 a m
		C & A Ry		
7 10 p m	7 00 a m	Ar.....Omaha.....Lv	9 05 p m	7 50 a m
12 25 a m	1 00 p m	.....St Joseph.....	2 45 p m	3 00 p m
11 55 a m	11 55 p m	.....Atchison.....	3 15 a m	3 20 p m
8 50 "	9 15 "	.....Kansas City.....	6 00 a m	6 45 p m
5 50 p m	6 30 a m	Lv....Bloomington ....Ar	9 00 p m	8 55 a m
		C & A Ry		
7 45 p m	7 45 a m	Ar..... St. Louis Lv	7 55 p m	7 50 a m
1 45 "	2 10 a m	Lv....Bloomington ....Ar	2 10 a m	1 45 p m
		L. E. & W Ry.		
1 25 p m	1 35 a m	Ar.....C & A Junc.....Lv	2 20 a m	9 20 a m
1 15 "	1 25 a m	..... Bloomington.	2 30 "	9 30 a m
11 40 a m	11 58 p m	..... Gibson	4 02 "	10 51 a m
11 02 "	11 18 "	..... Paxton	4 38 "	11 24 a m
10 10 "	10 20 "	.....Hoopeston	5 34 "	12 30 p m
9 10 "	9 20 "	.....Templeton.....	6 38 "	1 24 "
8 25 "	8 25 "	.....LaFayette.....	7 45 "	2 20 "
8 04 "	8 04 "	.... LaFayette Junc.....	7 52 "	2 25 "
7 04 "	7 02 "	.....Frankfort.....	8 53 "	3 16 "
6 08 "	6 02 "	..... Tipton.....	9 55 "	4 10 "
5 36 "	5 38 "	.....Elwood	10 21 "	4 32 "
5 15 "	5 17 "	.....Alexandria	10 42 "	4 51 "
4 35 "	4 35 "	.....Muncie.....	11 35 "	5 45 "
3 46 "	3 42 "	..... Red Key	12 15 p m	6 25 "
3 18 "	3 13 "	..... Portland	12 42 "	6 20 "
2 14 "	2 07 "	.....Celina.....	1 44 "	7 52 "
1 50 "	1 42 "	..... St Mary.....	2 07 "	8 13 "
12 45 "	12 45 "	Lv Ar	3 05 "	9 15 "
12 35 "	12 2 "	Ar.....Lima Lv	3 15 "	9 25 "
12 00 p m	11 49 a m	v.... ..Bluffton.....Ar	3 48 "	10 02 "
11 21 "	11 12 a m	.....Findlay	4 25 "	10 38 "
11 00 "	10 52 a m	.....Arcadia	4 46 "	11 00 "
10 43 "	10 37 a m	.....Fostoria.....	5 00 "	11 15 "
10 10 "	10 07 a m	..... Burgoon.	5 32 "	11 44 "
9 45 "	9 45 a m	.....Fremont.....	6 05 "	12 10 a m
8 40 p m	8 45 a m	.....Sandusky.	7 00 "	1 00 "
		P. F. W. & C. R'y		
11 10 p m	9 50 a m	Ar..... Lima Lv	4 10 p m	4 40 p m
7 05 p m	10 10 a m	Lv .....Crestline .....Ar	1 15 p m	7 55 p m
12 40 "	11 15 p m	..... Pittsburgh	5 30 a m	3 35 a m
3 10 a m	3 40 p m	.....Harrisburg	1 55 p m	3 20 p m
11 30 p m	10 55 a m	.....Baltimore.....	5 10 p m	6 50 p m
11 20 "	11 50 a m	..... Philadelphia	4 45 p m	9 35 p m
8 00 p m	9 00 a m	..... New York.....	6 55 p m	6 50 p m
		L S & M S R'y		
.....	8 40 a m	Ar..... Sandusky.....Lv	.....	6 05 a m
9 42 p m	.....	.....Fremont	6 32 p m	.....
6 40 "	6 30 a m	Lv.....Cleveland.....Ar	9 40 p m	8 25 a m
11 55 a m	11 55 p m	..... Buffalo	3 30 a m	2 45 p m
2 15 "	3 0 p m	.....Albany	2 20 p m	2 00 a m
9 15 p m	10 30 a m	..... New York.....	7 00 p m	7 00 a m
7 00 "	8 30 a m	Lv.....Boston .....Ar	9 45 p m	6 35 a m

Through tickets on sale to all important points. For information in regard to tickets, rates, &c. inquire of Ticket Agents at principal ticket offices, or address,

G. W. SMITH,
Gen'l Pass. Agent,
BLOOMINGTON, ILL.

MAPS OF THE VARIOUS OIL FIELDS

FOR SALE BY

McMULLEN, SNELL & ARMOR, Bradford, Pa.

The PITTSBURG & WESTERN RAILROAD Time Table

IN EFFECT JUNE 14th, 1886.

Central Standard Time, one hour slower than Eastern Time.

NORTHERN DIVISION.

SOUTHBOUND TRAINS.

STATIONS.		21	25	17	19
N. Y., L. E. & W. R. R		P. M.	A. M.	A. M.	A. M.
Bradford ..... Lv.	.....	2 20	.....	6 15	11 40
Mt Jewett ..... Lv.	.....	5 00	.....	7 40	12 30
Kane	.....	5 40	.....	10 46	1 20
Sheffield Junction	.....	.....	.....	11 40	2 15
Marienville	.....	.....	.....	12 20	3 02
Tylersburg	.....	.....	.....	1 00	3 48
Clarion Junction	.....	.....	7 00	1 40	4 30
Clarion	.....	.....	6 30	1 15	4 05
Shippenville	23	.....	7 12	1 53	4 45
Knox		.....	7 30	2 08	5 00
St. Petersburg	A. M.	.....	8 20	2 48	5 40
Foxburg	5 40	.....	8 50	3 25	5 55
Parker	5 50	.....	9 00	3 42	.....
Bruin	6 08	P. M.	9 20	4 02	P. M.
Petrolia	6 18		9 32	4 15	
Karns	6 22	27	9 38	4 20	9
Millerstown	6 36		9 55	4 38	
St. Joe	6 50	A. M.	10 08	4 53	P. M.
Butler	7 20	8 38	10 40	5 40	1 55
Renfrew	7 41	8 55	11 00	6 00	2 11
Callery Junction	8 10	9 20	11 25	6 25	2 35
Allegheny ..... Ar.	10 30	10 30	12 40	7 35	3 58
	A. M.	A. M.	P. M	P. M.	P M

NORTHBOUND TRAINS

STATIONS.	4	8	18	24	26
	A. M.	A. M.	A. M.	P. M	P. M.
Allegheny ..... Lv.	6 00	9 20	7 20	1 46	5 35
Callery Junction	7 30	10 40	8 34	3 07	6 50
Renfrew	7 58	11 00	8 55	3 29	7 12
Butler	8 20	11 20	9 15	3 55	7 33
St. Joe	.....	.....	9 40	4 25	8 00
Millerstown	.....	A. M.	9 55	4 38	8 14
Karns	.....		10 12	4 54	8 28
Petrolia	.....	20	10 16	4 58	8 32
Bruin	.....		10 32	5 10	8 43
Parker	.....	A. M.	10 52	5 28	9 00
Foxburg	.....	6 2	11 25	6 00	9 10
St. Petersburg	.....	6 40	11 40	6 17	.....
Knox	.....	7 30	12 25	7 00	....
Shippenville	.....	7 48	12 40	7 18	.....
Clarion Junction	.....	8 02	12·55	7 30	P. M.
Clarion	.....	8 25	.....	8 00	
Tylersburg	.....	8 9	1 30	.....	22
Marienville	.....	9 18	2 10	.....	
Sheffield Junction	.....	10 00	2 50	.....	A. M.
Kane	.....	10 55	3 35	.....	6 30
Mt. Jewett ..... Ar.	.....	12 10	4 40	.....	7 10
Bradford ..... Ar.	.....	2 05	6 05	.....	9 15
		P M.	P. M.	P. M.	A.

Westbound trains leave Callery Junction as follows:

Cleveland and Toledo Express 8.35 a. m., New Castle Accommodation 3.10 p. m., Chicago Express, with through Sleeping Car, 4 38 p. m., Zelienople Accommodation 6.50 p. m.

No. 17 makes direct connection at Allegheny with B. & O. R. R. for Washington and Baltimore.

No. 19 connects at Foxburg with A. V. R. R. for Franklin and Oil City.

SUNDAY TRAINS Nos. 23 and 26 will run daily. Nos. 18 and 17 will run daily between Butler and Allegheny. No. 23 connects at Callery Junction for Allegheny and New Castle. No. 26 gets connections from Allegheny and New Castle. All other trains run daily, except Sunday.

THOS. M. KING, General Manager.

C. W. BASSETT, General Passenger Agent.

Pittsburgh & Lake Erie R. R. Time Table.

IN EFFECT MAY 10, 1886.

[Read Down.]		Central Time.	[Read Up]	
5 00a.m.	8 15a m.	..... Bradford	6 20p.m	11 35 a.m
5 30a.m	10 55a m.	..... Salamanca	4 13p m.	8 00 a m
6 45a m.	11 55a m.	..... Jamestown	3 0-p.m.	7 0 a.m
9 20a.m	2 20p.m.	..... Meadville	12 50p m.	5 15 a.m
10 55a.m.	5 40p.m.	..... Youngstown	10 35 a.m.	1 25 a.m
12 52p.m.	7 30p.m	..... Shousetown.	8 26a m	11 25 p.m
1 30p m.	8 00p m.	..... Pittsburgh	7 45a m.	10 45 p m

W. C Quincy, General Manager.

A. D. Smith, General Pass. Agent.

DUNKIRK, ALLEGHENY VALLEY & PITTSBURGH R.R

JUNE 20, 1886.

Going North.	Express. No. 2.	Mail. No. 4.	Sunday. No. 6.
Titusville, leave	7 35a.m.	3 20p.m.	7 35a.m.
Grand Valley	8 03a.m.	3 48p m.	8 01a.m.
Irvineton	8 45a.m.	4 36p.m.	8 44a.m.
Warren	8 58a.m.	4 53p.m.	8 56a.m.
Junction	9 55a.m.	5 45p.m.	9 48a.m.
Lily Dale	10 50a.m.	6 36 .m.	10 37a.m.
Dunkirk, arrive	11 25a m.	7 10p.m.	11 12a m.

Going South.	Mail. No. 1.	Express. No. 3.	Sunday. No. 5.
Dunkirk, leave	9 25a.m.	4 00p m.	2 40p.m.
Lily Dale	10 03a.m.	4 38p.m.	3 14p.m.
Junction	11 02a.m.	5 45p m.	4 08p m.
Warren	11 55a.m.	6 44p m.	5 06p.m.
Irvineton	12 10a.m.	7 00p.m.	5 22p.m.
Grand Valley	12 58p.m	7 49p m.	6 12p.m.
Titusville Ar	1 20p.m.	8 15p.m.	6 40p.m.

Baltimore & Ohio Railroad Time Table.

Depot corner Grant and Water streets, Dec. 13, 1885. Trains will arrive and depart on Eastern Standard time.

For Washington, D. C., and Baltimore, 8:35 a. m., limited, with Parlor car, and 9:20 p. m. daily.

Uniontown, 6:20 a. m., 1:10 and 4:00 p m.

West Newton, 5:15 and 7:30 p. m.

McKeesport, 7:20, 10:15 a. m., 12:05, 3:20, 4:30, 5:50, 6:40, 9:50 and 11:45 p. m.

From Washington and Baltimore, 7:00 a. m. and 7:35 p. m., daily.

Uniontown, 0:00 a. m., 2:30 and 5:45 p. m.

From West Newton, 8:30 a. m. and 11:00 p. m. McKeesport, 6:50, 7:25, 8:00, 9:00, 11:35 a. m., 1:10, 5:00, 6:20 and 8:00 p. m. Sunday trains leave 8:35 a. m., 1:00, 7:30, 9:20, 9:50 and 11:45 p. m. Arrive 7:00, 9:00, 10:20 a. m, 7:35, 7:20 and 11:00 p. m.

WHEELING AND COLUMBUS DIVISION.

For Wheeling, 6:50 and 8:40 a. m., 3:30 and 8:00 p. m.

Columbus, Cincinnati, 6:50 a. m. and 8:00 p. m. Chicago express 3:30 p. m. Washington accommodation, 5:30 p. m. Sleeping car for Columbus and Cincinnati.

From Wheeling, Columbus, Cincinnati and Chicago, 8:20 and 11:15 a. m., 4:45 and 9:40 p. m. Washington acc., 8:10 a. m.

C. K. LORD, General Passenger Agent.

B DUNHAM, General Manager.

E. D. SMITH, Division Passenger Agent.

PENNSYLVANIA RAILROAD—P. & E. DIVISION.

On and after May 31st, '86, trains will leave Emporium as follows: For Harrisburg, Baltimore, Washington and the South, Philadelphia, New York and the East, 8:25 a. m., and 9:05 p. m. on week days. Pullman sleeping car on the 9:05 p. m. from Emporium to Philadelphia and from Williamsport to Washington.

For Erie and intermediate stations, 10:40 a. m. week days.

For Kane and intermediate stations, 10:40 a. m. and 7:05 p. m. on week days.

J. R. WOOD, Gen'l Pass. Agent.

CH S. E. PUGH, General Manager.

SHENANGO & ALLEGHENY R. R.

TAKES EFFECT MONDAY, OCT. 11, 1886.

Trains are run by Standard Central Time (90th Meridian.)

NORTHWARD. 6	4	2	STATIONS.	SOUTHWARD. 1	3	5
P. M.	P. M.	A. M.		A. M.	A. M	P. M.
8 05	2 25	10 40	Ar ..... Greenville ..... Dp	6 07	11 10	3 20
7 55	2 15	10 30	..... Shenango	6 17	11 20	3 33
7 41	1 59	10 17	..... Kremis	6 29	11 31	3 44
7 31	1 47	10 08	..... Fredonia	6 37	11 40	3 52
7 24	1 40	10 02	..... Coolspring	6 42	11 45	3 56
7 23	1 38	10 01	..... Kerby siding	6 43	11 46	3 57
7 12	1 26	9 50	..... Mercer	6 57	11 58	4 08
7 02	1 15	9 40	..... Pardoe	7 07	12 08	4 17
6 57	1 07	9 36	..... Filer	7 11	12 12	4 22
6 49	1 00	9 29	..... Grove City	7 19	12 22	4 28
6 46	12 55	9 26	..... Reed	7 20	12 24	4 30
6 35	12 40	9 16	..... Harrisville	7 33	12 40	4 41
6 30	12 34	9 12	..... Wick	7 37	12 45	4 45
6 25	12 29	9 07	..... Branchton	7 42	12 50	4 50
6 22	12 25	9 05	.... Coaltown Junction	7 44	12 52	4 52
6 19	12 22	9 03	..... Keisters	7 47	12 55	4 55
6 11	12 14	8 56	..... Hallston	7 56	1 03	5 02
6 02	12 04	8 46	..... Euclid	8 07	1 13	5 11
5 53	11 54	8 37	..... Jamisonville	8 17	1 22	5 19
5 45	11 45	8 30	..... Onida	8 30	1 31	5 25
5 35	11 35	8 20	..... P. & W. Junction	8 40	1 42	5 35
5 25	11 30	8 15	Dp ..... Butler ..... Ar	8 43	1 45	5 37
			Pittsburgh & Western R. R.			
3 30	9 20	6 00	..... Allegheny	10 30	3 58	7 35
P. M.	A. M.	A. M		A. M.	P. M.	P. M.

HILLIARD BRANCH.

10	12	STATIONS.	9	11
A. M.	A. M.		A. M	P. M.
12 00	7 30	Ar ..... Branchton ..... Dp	9 1	6 30
11 50	7 20	..... Bovard	9 20	6 35
11 30	6 56	..... Annandale	9 40	7 00
11 20	6 48	..... Roy	9 50	7 10
11 00	6 40	Dp ..... Hilliard ..... Ar	10 00	7 20
A. M.	A. M.		A. M.	P. M.

Trains 4 and 5 run daily with through coach service between Allegheny, Chantauqua Lake and Jamestown, N. Y. All other trains daily except Sunday.

I. D. STINSON G. P. A. Greenville, Pa.

J. T. BLAIR, Gen. Man. Greenville, Pa.

Buffalo, New York & Philadelphia R. R.

THE NEW SHORT LINE TO

SUNBURY, WILLIAMSPORT, HARRISBURG PHILADELPHIA, BALTIMORE, WASHINGTON,

AND ALL POINTS SOUTH.

Leave Buffalo at 8:00 a. m. (except Sunday) arriving at Olean at 11·00 a. m. Connects at Olean for Bradford. Arriving at 12:45.

Train leaves Buffalo at 2:00 p. m. (except Sunday) arriving at Olean at 4:38 p. m., connecting at Olean for Bradford; at Port Allegany for Coudersport; at Emporium with P. & E. R. R for St. Marys, Ridgway, Kane, Harrisburg, Philadelphia, Baltimore, Washington and the South.

Train leaves Buffalo at 5:20 p. m. (daily) arrives at Olean at 8:20 p. m.

Train for Buffalo leaves Olean at 5:40 (daily) and 10:45 a. m. (except Sunday) arriving at Buffalo at 8:40 a. m. and 1:25 p. m.

Afternoon train leaves Olean at 3:58 (except Sunday) arrives at Buffalo at 7:00 p. m.

GEO. S. GATCHELL, Gen'l. Superintendent. J. A. FELLOWS, Gen'l. Pass and Ticket Agent.

NARROW GAUGE DIVISION, BRADFORD & OLEAN.

EASTWARD.				Sept 1, 1886.	WESTWARD.			
Sun.	Exp.	Mail	Exp.	Eastern Time.	Exp.	Mail	Exp.	Sun
A. M.	P. M.	P. M.	P. M.		A. M.	A. M.	P. M	P. M.
------	------	------	3 00	Ar. Richburg Lv	------	9 00	2 03	------
------	------	7 35	2 52	" Bolivar "	5 45	9 10	2 13	------
11 00	6 00	3 55	8 58	" Olean "	7 20	1 00	4 40	3 30
9 15	4 15	2 15	7 15	Lv. Bradford Ar	9 00	12 45	6 25	5 18
A. M.	P. M.	P. M.	A. M.		A. M.	P. M.	P. M.	P. M.

BETWEEN ELDRED AND BRADFORD.

Exp.	Exp.	Exp.	Eastern Time.	Exp.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 10	3 05	8 30	Ar. .....Eldred ..... Lv.	7 10	11 37	3 25
4 50	2 38	8 12	" ....Duke Centre... "	7 28	11 53	3 51
3 55	1 20	7 15	" .....Tarport..... "	8 25	12 50	5 15
3 50	1 10	7 10	Lv. ..... Bradford..... Ar.	8 30	12 55	5 25
P. M.	P. M.	A. M.		A. M.	P. M.	P. M.

30 Miles Saved by the New BRADFORD SHORT LINE,

Between Olean, Bradford, Warren and the Lower Oil Fields. Two fast Express Trains each way, daily except Sunday.

CONDENSED SCHEDULE OF THROUGH TRAINS.

EASTWARD.			June 21, 1886.	WESTWARD.		
Exp.	Acc.	Exp.	Eastern Time.	Acc.	Exp.	Exp.
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
8 00	3 25	11 25	Ar .....Bradford.....Lv	7 00	9 15	4 20
6 20	12 45	9 40	Lv.....Kinzua .....Ar	9 15	11 00	6 00
P. M.	P. M.	A. M.		A. M.	A. M.	P. M.
5 30	------	9 05	Lv..... Warren .....Ar	------	11 50	6 49
5 00	------	8 45	" .....Irvineton ..... "	------	12 10	7 10
4 25	------	8 10	" .....Tidioute..... "	------	12 43	7 40
3 05	------	6 50	" .....Oil City..... "	------	2 05	9 05
9 00	------	8 50	Lv.....Pittsburgh.....Ar	------	7 20	7 35
A. M.	------	P. M.		------	P. M.	A. M.

J. A. FELLOWS, Gen. Pass. and Ticket Agent, Buffalo, N. Y.

Buffalo, Rochester & Pittsburgh R. R.

BUFFALO AND ROCHESTER DIVISION.

July 18, 1886--Eastern Time.

				STATIONS.				
P. M.	A. M.	P. M.	A. M.		A. M.	M.	A. M.	P. M.
------	------	6 25	11 00	Ar. Buffalo.. Lv	8 00	5 05	--	------
9 37	------	------	------	" Rochester "	----	------	7 50	5 40
------	9 40	----	------	" Salamanca "	----	------	11 48	10 09
5 17	5 35	3 30	8 00	Lv. Bradford. Ar	11 00	8 00	12 30	10 55
4 35	5 00	P. M.				P. M.	P. M.	
------	------	2 15	------	Ar do Lv	------	12 55	------	------
------	------	11 40	------	" Ridgway "	------	3 26	------	------
------	------	9 56	------	" Falls Creek "	----	4 55	------	------
------	------	9 50	------	" Dubois "	----	5 02	------	------
------	------	8 35	------	Lv Clayville Ar	------	6 10	------	------
------	------	A. M.						

☞ Thousand. Mile Tickets sold at Two Cents per mile. ☜

Connections made at Salamanca with the N. Y., P. & O. R. R. for all points West and Southwest; also with the Erie R. R. for all Eastern points; at Bradford with the Narrow Gauge system to all points in the Oil Regions.

JAS. T. GARDNER, Supt. I. S. EMERY, Gen. Pass. Agt.

Warren and Farnsworth Valley Railroad.

Narrow Gauge Railroad to Garfield, Vandergrift and Dunham's Mills.

	A. M.	P. M.		A. M.	P. M.
Clarendon, Lv....	10 35	5 10	Garfield, Lv....	7 20	3 15
Garfield, Ar.....	11 35	6 10	Clarendon, Ar..	8 20	4 15

Trains are run on P. & E. R. R. time. Passengers can leave Oil City and Titusville for Garfield by morning train, remain three and one half hours in Garfield and return same evening.

A. D. WOOD, General Manager.

THE ERIE NARROW GAUGE SYSTEM.

BRADFORD, BORDELL & KINZUA

AND

Bradford, Eldred & Cuba Railroad.

WESTWARD.			STATIONS.	EASTWARD.		
b	a	b		b	a	b
P. M.	A. M.	A. M.		A. M.	P. M.	P. M.
5 20	10 43	8 30	Ar..... Bradford.....Lv	7 05	3 35	1 00
4 38	10 03	7 50	Lv... Kinzua Junction... "	7 50	4 20	1 45
4 10	9 55	7 40	" ..... Aiken ..... "	8 03	4 28	1 53
3 56	9 41	7 26	" .....Simpson..... "	8 19	4 44	2 09
3 15	9 00	6 45	" .....Smethport.....Ar	9 00	5 25	2 50
4 29	9 54	7 40	" .....Rew City.....Lv	7 59	4 29	------
4 06	9 33	------	" ..... Rixford..... "	8 15	4 45	------
4 01	9 28	------	" .....Duke Centre..... "	8 20	4 50	------
3 44	9 11	------	" ..... .Eldred ..... "	8 37	5 07	------
3 27	8 54	------	" ..... Bullis Mills..... "	8 54	5 24	------
3 11	8 38	------	" ....Ceres..... "	9 10	5 40	------
2 57	8 24	------	" .... Little Genesee..... "	9 24	5 54	------
2 48	8 10	------	Ar..... Bolivar Lv	9 33	6 03	------
2 23	7 46	------	Lv..... Allentown ..... "	9 57	6 27	------
P. M.	A. M.	A. M.				
1 50	7 13	------	Lv..... Wellsville. .....Ar	10 30	7 00	------
A. M.	A. M.	P. M.	N. Y., L. E. & W. R. R.			A. M.
8 40	3 15	7 45	Ar..... Hornellsville Lv	12 03	8 40	12 50
------	------	------	" .....Elmira..... "	1 27	10 20	2 15
P. M.	P. M.	A. M.				
------	------	------	" .....Binghamton..... "	2 55	12 12	3 45
9 00	6 00	9 00	Lv.....New York.....Ar	8 55	7 30	9 55

Additional train leaves Wellsville daily, except Sunday, at 4.20 p. m., arriving at Allentown at 5.05, and Bolivar at 5.40 p. m.

Additional train leaves Bolivar daily, except Sunday at 9.40 a. m., arriving at Eldred at 11.00 a. m. and Bradford at 3 00 p. m.

Tickets for sale at the Union depot.

a—Runs daily. b—Runs daily except Sunday.

JOHN C. McKENNA, Superintendent.

WHEELING AND LAKE ERIE

And Cleveland and Marietta R. R's.

Time Table—In effect Nov. 1, 1886. Central Standard Time.

EASTWARD.	No. 5.	No. 7.	No. 9*	No. 1*
Toledo Lv	7 45a. m.	12 30p.m.	4 45p.m.	.....
Oak Harbor.....Ar	8 43	1 22	5 38	.....
Fremont.....	9 07	1 47	6 02	.....
Clyde	9 23	2 03	6 18	.....
Bellevue.....	9 38	2 18	6 32	.....
Monroeville..... Lv	9 57	2 32	7 01	1 35a. m.
Norwalk.....	10 13	2 50	7 20	1 50
Wellington	11 03	3 45	9 00	2 32
Creston..... .....Ar	11 52	4 33	10 45	3 15
Orrville ....Ar	12 20p.m.	5 05	11 45p.m.	3 45*
Orrville.....Lv	12 40	5 05	6 00a. m.	6 00
Massillon .....Ar	1 20	5 45	6 40	6 40
Massillon Lv	1 20	5 45	6 40	6 40
Bowerston .....Ar	2 55p.m.	7 35p.m.	9 40a, m.	9 40 a.m.
Canal Dover.....	2 34p.m.	7 02p m.	11 30a. m.	11 30 a.m.
Newcomerstown	3 13	7 46	12 09p.m.	12 09p.m.
Cambridge.....	4 08	8 37	1 02	1 02
Macksburg	5 39	.....	2 30	2 30
Marietta ..... Ar	6 55p m.	.....	3 38	3 38
WESTWARD.	No. 6.	No. 8.	No. 4.	No. 2*
Marietta Lv	7 00a. m.	11 00p.m.	.....	.....
Macksburg.....	8 18	12 05	.....	.....
Cambridge.	9 52	1 27	5 20 a.m.	.....
Newcomer town	10 47	2 20	6 20	.....
Canal Dover.....	11 30 a.m.	2 54p.m.	6 55	.....
Bowerston	11 55 a m.	3 30p.m.	6 30 a.m.	.....
Massil on.....	1 20p.m.	7 10	8 15	.....
Orrvi le.....Ar	1 55	8 20	8 55	.....
Orrville..... Lv	2 00	10 15*	8 55	.....
Creston Lv	2 30	10 45	9 25	.....
Wellington	3 18	11 28	10 12	*
Norwalk.....	4 10	12 10	11 25	7 25a. m.
Monroeville.....	4 22	12 25a. m.	11 37	7 37
Bellevue	4 40	*	11 55	7 53
Clyde	4 56	.....	12 10p.m.	8 08
Fremont.....	5 13	.....	12 30	8 25
Oak Harbor.....	5 41	.....	12 55	8 48
Toledo.....Ar	6 35p.m.	.....	1 55p.m.	9 45a. m

No. 29.	No. 27.	NORWALK & HURON.	No. 26.	No. 28.
5 5p.m.	11 40a.m.	Ar.....Huron.....Lv	6 25a. m.	2 05p.m.
4 30p.m.	10 45a.m.	Lv.....Norwalk.....Ar	7 15a. m.	3 00p.m.

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THE PETROLEUM AGE.

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THE OHIO OIL FIELDS.

EXTRACTS FROM PROF. EDWARD ORTON'S PRELIMINARY REPORT ON THE GEOLOGY OF THE NEW OIL AND GAS FIELDS IN OHIO.

THE CINCINNATI ANTICLINAL.

THE dominant feature in the earlier history of Ohio is a low fold, so-called, that entered the State in its southwestern corner, from Kentucky, and that gradually advanced across it to Lake Erie and the Michigan border.

It is called an axis or anticlinal, but there is nothing in it that answers to the common idea of such a structure. It is not a sharp ridge, or in fact any kind of a ridge, but as far as can now be seen, it consists of a flat tract, thirty or more miles in breadth, with very little dip, if any, in an east and west direction, but descending to the northward at the rate of three to five feet to the mile, with great steadiness and uniformity. When it comes within twenty or thirty miles of Lake Erie, it makes a sharper descent, falling at the rate of fifteen or twenty feet to the mile, for that distance. On the eastern side of this tract or axis, the strata begin a uniform descent at the rate of fifteen to twenty-five feet to the mile, in a direction always south of east. The usual direction lies between S. 60 E., and S. 75 E. This rate and this direction hold far within the coal field giving way to a more southerly direction and being sometimes transformed into a simple southward dip in Northeastern Ohio.

The limit of the western slope has not been traced throughout. Probably there is no definite and continuous boundary, but within the area of the original uplift, there are many inequalities in the level of the Trenton limestone. A line of sharp descent to the westward passes through the town of Findlay, and is connected with the great production of gas at that point. Another such line passes through Putnam and Wood counties, but on the other hand, the surface of the Trenton limestone is approximately at the same level at Van Wert, Lima and Upper Sandusky—or along an east and west line sixty to seventy miles in length. Facts are rapidly accumulating which will give a sufficient basis for generalization upon this point.

There seems no reason to believe, at the present time, that there is within this entire area any facts of structure corresponding to the general idea of an axis, viz.: a tract of narrow breadth, a mile or two at most, extending for many miles or scores of miles, with rapid descents on either side.

It appears that the elevated tract now under consideration received its present structural features at an early day. The Trenton limestone must have been affected by the movements which have disposed it in its present conditions before the great mass of soft rocks by which it is now covered, were deposited upon it. At all events, there is a smaller measure for these shales by 200 feet in the central region, than there is immediately to the eastward. In other words, there is an arch in the underlying Trenton, revealed by the drillers, of which no hint whatever could be obtained by the surface exposures.

It is only on these elevated portions of the Trenton limestone that oil and gas have so far been found. In Findlay (upper level), and in Bowling Green, its upper surface has been found to be 300 to 400 feet below sea level. In the lower level at Findlay, it falls as low as 480 feet below sea level. At Lima it is about 400 feet below. At Carey, where small gas wells have been struck in the Trenton, its surface is 510 feet below sea level. Nothing of real value has thus far been found in it where the top of the Trenton descends below these figures. Of course, good wells may be found at any time, which will overthrow the value of this deduction, but to the present date all the facts brought in have confirmed it.

OTHER ARCHES AND IRREGULARITIES OF STRATA.

In Eastern Ohio there are a few low anticlinals that traverse the rocks, affecting them equally from the top to the bottom of the scale. Some of them come in from Western Pennsylvania, and gradually die out here. Others originated in Ohio and run their whole course, never a long or marked one, in the State.

East Liverpool and its neighborhood are traversed by one of these folds. Steubenville and the region below it on the river also show similar disturbance. In both cases the disturbance is slight and ineffectual as a means of accumulating gas or oil on the large scale. The fatal salt water dropsy attacks and destroys the wells that are drilled here. There is a slight fold near Salibury, on Yellow Creek. Cambridge is at the centre of the most conspicuous uplift in the eastern part of the State. It is quite likely that it extends to the southwestward through Morgan county. There are lines of arrested dip in the vicinity of Gaysport and McConnellsville that may be, one or other, connected with this disturbance. Mineral Point, Tusearawas county, is a region of disturbed stratification, but no axis has been traced through it.

Sinking Springs, Highland county, and a few square miles around it, contain by far the most striking effects of disturbance shown in Ohio. There are actual faults here of 300 feet or more in amount.

There are also lines of fracture in the shales of Northern Ohio that may constitute minor axes. In the valley of the Rocky river, near Berea, good gas wells have been found on these lines of uplift.

There is much more to be learned of Northwestern Ohio than has been believed hitherto. A most interesting field of study is opening here, in which fractures and dips, undreamed of in these drift-covered plains, are revealed to us, exceeding in amount and geological importance anything that we know elsewhere in the State.

The shore of Lake Erie, west of Cleveland, also has many points in this connection deserving of careful investigation and measurement. In the vicinity of Kalida, Putnam county, there is a well-marked structural disturbance. A sharp, but probably superficial anticlinal cuts the rocks for a considerable distance.

A peculiar form of movement has been experienced at several points in Southeastern Ohio, which is found to ally itself with petroleum and gas supply in a most important way. It may be styled the terrace structure. It seems to replace the arch, or rather to constitute the later stages of the arch as it is dying out. There is an arrest of dip in a series that has been found sloping regular in a given direction. For a mile, more or less, the beds run level, or nearly so, and then resume their equable descent. This may be styled the suppressed arch or anticlinal. It was first pointed out by Mr. F. W. Minshall, a sagacious observer and an experienced oil operator, in the Macksburg field. Careful leveling of this field has brought out this structure very clearly. All the oil production of Macksburg comes from the level portion of the rocks or the terrace, a half dozen horizons proving productive within this area, and not outside of it. Gas is found on the upper edge of the oil field where the rocks begin to rise, and salt water is now being reported in the wells on the descending slope of the oil sands.

The determination of all these structural features in Ohio is the more difficult by reason of their apparent insignificance. It is not as in Pennsylvania, where he who runs may read the record of rise and fall, of arch and trough, but here only careful measurements and close observations will detect the departures from normal rates. On the whole, Ohio is a wonderfully regular 40,000 square mile of the earth's crust. In composition and in structure alike, it follows the simplest and the fewest laws that are possible.

There are two main horizons of oil and gas now known in the geological column of Ohio, viz.:

The Berea grit.

The Trenton limestone.

There are numerous other horizons at which oil and gas, one or both, are occasionally found, but generally in small quantity. These extra horizons are mainly the conglomerate and coal measure sandstones, but one valuable source of gas remains to be added to them, viz.: the Ohio shale, along its lines of outcrop. These several horizons will be briefly discussed.

THE TRENTON LIMESTONE AS A PRODUCT OF PETROLEUM AND HIGH PRESSURE GAS.

The Trenton limestone is one of the most widely extended strata of the North American continent. It stretches from the islands north of Hudson's Bay, to Alabama, and from Quebec to Minnesota. It has thousands of outcrops within these wide boundaries. It is known to be bituminous in New York; in Canada, it yields a little oil; in Kentucky and Tennessee also, it has been credited with oil and gas production, but it was a geological surprise when it was found to be a great storehouse of fossil power underneath the flat country of Northern Ohio. It had already been tapped at various points in the State, and had given no sign of such contents. The drill had reached it at Eaton, at Cincinnati in numerous wells, at Columbus, and at a few other points, and in none of them had it given rise to even the suspicion of being heavily charged with oil or gas. The discovery of this new horizon is certainly one of the most remarkable and important discoveries in the geology of the State. The rock is already yielding many million feet of gas per day, of enormous value as a source of power. It is also producing 1000 to 1500 barrels of oil per day, and the development is going forward with great rapidity, and with all of the excitement that everywhere attends such exploitation. At least a half million dollars will have been spent in drilling wells in the new field by the close of the present year, according to present indications. Tankage on the large scale and pipe lines are being introduced into the chief centres of production, and in short, all the familiar experiences in the opening of a new oil field are going forward here, with a lower Silurian limestone that lies a thousand feet and more below the surface, and the nearest outcrops of which are 500 miles distant, as the base of operations. All this is a complete geological surprise. The practical driller has a maxim to the effect that "geology never filled a tank." Certainly geology takes no credit for the discovery of Trenton limestone oil and gas in Northwestern Ohio.

THE FINDLAY FIELD.

The credit of the discovery of high pressure gas in the Trenton limestone belongs largely to one man, Dr. Charles Oesterlin, an old and highly respected citizen of Findlay. Natural gas has been known in Findlay since the county was first settled. In digging wells, cisterns and sewers, in springs and rock crevices, inflammable gas has been constantly found during the last fifty years. It has been utilized here in the small way for more than forty years. Prof. Winchell, in his report upon the geology of the county in 1872, made mention of the interesting fact that Mr. Jacob Carr had, for a number of years, lighted his house on Main street with gas collected from wells on his premises. The gas was introduced into this house by Daniel Foster in 1838, and has been burning ever since. Other facts bearing on the gas supply were given by Prof. Winchell. The composition of the gas had been determined for Mr. Carr by Dr. Chilton, of New York, who pronounced it light carbureted hydrogen and derived from petroleum. The first statement gave the result of an approximate analysis, and the second was a sagacious inference.

The sulphurous compounds of the gas were especially observable. A small percentage of sulphuretted hydrogen goes a good way in advertising its presence. This gas was absorbed by the water of wells and springs, which was made in many cases unfit, or at least unpleasant for use in this way.

Explosions frequently occurred in wells, sewers and other excavations, by reason of the accumulation of the gas These facts were familiar to everyone. and the presence of the gas was looked upon as an evil to be endured, or as a nuisance that could not easily be abated.

Dr. Oesterlin seems to have been the only one who saw clearly that there was a source of light and heat in it that could possibly be utilized in a large way. He urged, many years ago, the formation of a company to drill for gas, and when the Geological Survey of the State was organized in 1869, he brought the subject before a member of the corps, but the time had not come for the recognition of this form of power. The experience of Pittsburgh was needed to complete the demonstration that a new source of light and heat is available to at least a few favored districts. The interest in the new fuel that was gradually invading Ohio, made it possible, early in 1884, after several ineffectual attempts, to organize a company to drill for natural gas at Findlay. In this organization, Mr. Charles J. Eckels stood next to Dr. Oesterlin in recognizing and urging

the possibilities of Findlay. It is quite certain that drilling would have been undertaken here sooner or later if this organization had not been formed, but in point of fact, it fell to the Findlay Natural Gas Company to make the demonstration by the drill, in November, 1884, that high pressure gas existed in a firm but porous limestone rock, that was reached at 1100 feet below the surface of the town. This discovery is the most important, in a practical point of view, that has ever been made in the geology of Ohio.

The drilling was conducted by Brownyar & Martin, of Bradford, Pa., and the immediate supervision of the work was undertaken by Mr. W. M. Martin, the junior member of the firm. To Mr. Martin's intelligent interest in his work from that time to the present, and for the various well records and important facts that he has furnished, the Geological Survey is under great obligation. The Natural Gas Company in their contract, made the requirement that the well record should be carefully kept, and that samples should be saved of all changes in the rocks. All this was done, and now Mr. Eckels, already named as a member of the company, took upon himself to collect a full set of samples of drillings, and his work was done with care and completeness.

These drillings of the first well were turned over to the service of the survey, and the record, though unexpected, proved to be surprisingly clear and unambiguous. It was, in fact, the type section of the interval traversed from the New York scale that was here found. The Cincinnati group, of Southern Ohio, which has already been shown to be composed of the Hudson river and Utica formations, so blended that the line cannot be safely drawn between them, and that moreover, has in Southern Ohio a large and frequently a predominant percentage of limestone, was here found to have lost the latter element mainly, and to be very distinctly differentiated into the typical and representative sections of New York. In other words, there was found here the Hudson river shales of New York, with characteristic color, composition, fossils and thickness, and below them, the Utica shale, in normal section in all respects. The solid limestone underlying the Utica shale had no uncertain place in the column. It could be nothing else but the Trenton limestone.

Further than this, the red shale of the Medina period, one of the distinct and easily recognized landmarks of this portion of the scale, was shown here with a thickness of fifty feet, overlying the Hudson river shale. Above this, were the Clinton shale and limestone, the latter in high colors as in the outcrops to the southward, then the Niagara shale, or at least a few feet of the characteristic fine grained clay that has been named the Clinton clay, at its very base, and above this, the Niagara limestone, to the surface upon which, or near which, the drill began its descent. All this was highly satisfactory, and by means of this well-determined section, it became easy to follow the work that was so eagerly taken up on all sides, and when the point of beginning was known, to predict in a general way the section to be found.

The supply of gas obtained from the surface of the Trenton limestone in the first well though vigorous, was not all that was counted possible, and in default of previous experience, it was determined to go deeper in search of a more abundant flow. The drill finally rested at 1648 feet below the surface, still in limestone rock, but no accessions of gas were made in this long and expensive descent. The 552 feet of limestone, unbroken except by occasional slight changes in composition that was passed through in this last descent, probably all belongs to the Trenton age. The Birdseye mark came distinctly to view in the drillings from 1500 feet or thereabouts.

Salt water was struck at a number of horizons, but the most vigorous current came from the bottom. The well was finally plugged 100 or more feet below the gas horizon, and the salt water was mainly held back. A little petroleum came from the gas rock as it was drilled deeper. It was a black, heavy, fetid oil with a gravity of about 35° B.

As was to be expected from the surface indications in and about Findlay, gas was found all the way down the well. Notable supplies were obtained at 516, 618, 640 and 718 feet, all in the Hudson river shale, and apparently under limestone caps. The last horizon (700 feet), is a permanent and important one in several wells, and in various parts of the new field. The gas of the Hudson river shales is probably derived from the underlying Utica shale that contains a small percentage of petroleum in addition to a considerable percentage of organic matter. It often occurs in "blowers" or pockets that show high pressure for a few hours and then disappear altogether. The shale gas generally contains a larger percentage of sulphur compounds than the main supply, but there is a point of view in which this rank odor of both is an advantage. Its presence is at once detected whenever leaks in pipes occur.

The main gas of the first well came with force enough to run an engine when turned into it instead of steam. When lighted from a stand pipe it was visible at night on all sides at a distance of ten or fifteen miles. The flame that shot up from it bore witness to a fact of immense importance to Findlay and to other districts of Northwestern Ohio. Curiosity at first bore sway, but this presently was re-enforced by a more practical interest. Other wells were at once projected, and the gas was soon brought into varied use.

The Findlay Gas Light and Coke Company (artificial gas) saw that its occupation was gone unless it too secured the new light and fuel. A well put down by Mr. W. M. Martin for this company early in 1885 repeated the history of the pioneer well in almost every particular. The gas was turned at once into the city mains.

The third and fourth wells were begun about the same time, the one by W. K. Marvin & Sons, to supply power for their machine shop, and the other by the Findlay Gas Light Company at the Adams Machine Shop, near the Lake Erie & Western Railroad station.

The third well followed in the track of the two first in most particulars, but the Trenton limestone was found a few feet lower. Its yield of gas was shown by the anemometer to be about 80,000 cubic feet per day. The first and second wells, no doubt, yielded more than this, perhaps twice or three times as much.

The fourth well disclosed several new and very important features of the field. The upper limestones were found 350 feet thick, instead of 250, as in the wells already drilled, but underneath, the section was the same as in the first three wells, the Trenton limestone being 1200 feet deep, instead of 1100 feet, as hitherto found. The surface of the ground throughout the town is all at one level, and consequently it was easy to see that there was an abrupt descent of the whole series of rocks traversed by the drill, to the amount of 100 feet in less than half a mile. This rate of dip is the steepest known in the State, but there was nothing whatever in the surface to suggest such a state of facts.

The well was found to yield several times as much gas as the largest already drilled. For the first time, Findlay had secured a fairly vigorous flow of gas. An anemometer measurement taken at this time showed that 1,296,000 cubic feet were escaping each day. With the gas, oil soon began to appear. In the course of two or three months, the well was producing from four to five barrels of oil daily, while the flow of gas was somewhat reduced. Its yield of oil has since largely increased at the further expense of the other element, until now it is valued more as an oil well than as a gas well.

The further development of the field cannot be minutely followed at this time. By the first of April, 1886, there had been drilled seventeen wells in and immediately around Findlay. Two of these, the Putnam street well and the Firmin well, were failures. All of the others were productive, eleveu yielding dry gas, and four yielding gas and oil. Of the latter group, one is counted exclusively an oil well, but there is gas enough in it to raise the oil once in tweuty-four hours, the flow averaging thirty-five barrels per day. One of the remaining three has been already characterized. The other two yield gas and oil, but one of them produces an inferior quality of oil and is being overrun with salt water to some extent.

Of the eleven wells yielding gas alone, one stands out pre-eminent. The Karg well, which was brought in about January 20, 1886, is not only by far the most vigorous producer of the Findlay field, but it is, at the same time, the largest gas well of the State, and probably the largest well that was ever known in Ohio. Just how the Karg well should be ranked in comparison with the largest of the Pennsylvania wells, is not certain. The rock pressure of the Findlay field is only about two-thirds of the pressure reported from certain gas fields of Pennsylvania, but no conclusions can be drawn from this fact alone. The *estimated* outflow of the great Pennsylvania wells has been made as high as 30,000,000 cubic feet per day. The *measured* yield of the Karg well is somewhat more than 12,000,000 cubic feet. According to this comparison, it produces less than half the volume of the former, but exact computations cannot be made until the same system of measurements shall be applied to the wells of both sections.

There are two other wells of great force in the field, viz.: the Cory well and the Briggs well, both located in North Findlay. The well known as the North Findlay well is also a large producer. The McManness and the Jones well are also excellent wells.

Of this series careful measurements have been made of the Karg, the Cory, the Briggs and the Jones wells, and their respective outflows from or near the top of the casing per day, are as follows:

	Cubic Feet.
Karg well	12,080,000
Cory well	3,318,000
Briggs well	2,565,000
Jones well	1,159,200

These measurements were all executed by Professor S. W. Robinson, of the Department of Mechanical Engineering in Ohio State University.

A brief summary of the more important facts in respect to Findlay gas and its production will be here given.

1. The composition of Findlay gas, as determined by Professor C. C. Howard, of Starling Medical College, Columbus, is as follows:

Marsh gas (light carburetted hydrogen)	92.61
Olefiant gas	0.30
Hydrogen	2.18
Nitrogen	3.61
Oxygen	0.34
Carbonic acid	0.50
Carbon c oxide	0.26
Sulphuretted hydrogen	0.20

In 100 cubic feet, there are 125.8 grains of sulphur. Its specific gravity is .57. Hence 1 cubic foot weighs 318.98 grains.

The determinations of composition have been repeated a number of times, and at intervals of several months, and all the facts seem to show a steady and constant composition.

2. The heating power of Findlay gas considerably exceeds that of the present Pittsburgh supply, and notably that of the new Grapeville gas, as thus far reported. The best statements in regard to Pittsburgh gas that have been met are those of Mr. S. A. Ford, chemist of the Edgar Thompson Steel Works. They appeared in the Natural Gas Supplement of the *American Manufacturer*, April, 1886.

He assumes an average chemical composition of this gas, the fact of its instability being well known. From this average composition, he deduces the heating power of the gas, and finds it to be expressed as 789,694 heat units to 100 liters. If a tou of Connellsville coke is counted worth $2.50, 1000 cubic feet of Pittsburgh gas is worth 7 8-100 cents, for its heating power.

If a ton of Pittsburgh coal is counted worth $1.20, 1000 cubic feet of Pittsburgh gas is worth, for its heat units, 3¼ cents. One ton of coal is equal to 36,764 cubic feet of gas.

Professor Howard has applied like calculations to Findlay gas. The results are as follows:

The heat units aggregate to the 100 liters, 878,082.

1000 cubic feet is worth, coke being $2.50, 9.4 cents.

1000 cubic feet is worth, Pittsburgh coal being $1.20, 3.9 cents.

One ton of coal is equal to 31,085 cubic feet of gas.

The actual prices of coal and coke are much greater in Findlay than those assumed. 1000 cubic feet of gas may be counted on the basis of actual prices, as equal to 8 cents in coal.

Findlay gas is thus seen to have the advantage at every point.

The heat units of Grapeville gas, according to Mr. John Fulton, aggregate, for 100 liters, 769,766.

Percentages of difference can easily be computed on the basis of the facts here given.

3. The rock pressure of Findlay gas is now about 375 pounds to the square inch. All wells reach this mark when closed. The large wells reach it in a short time, the Karg well for example, in 1½ minutes; the smaller wells requiring, perhaps, hours. The same liue of facts obtains in other gas fields. The futility of estimating the flow of wells from their pressure when closed, is seen from this statement. The large and small producers meet together on common ground, so far as pressure is concerned. Tne rock pressure, as nearly as can be learned, has fallen off slightly since the field was opened. In the first wells, 450 pounds was registered. Iu none is the limit of 400 pounds now passed. This fact can occasion uo surprise when the immense production of the field in 1886 is considered.

4. The gas and oil production of Findlay are found to be definitely associated with the most marked discordance of structure that is knowu in the geology of Ohio, except in a single field.

The surface of the town is a part of the great drift plain of this portion of the State, slightly furrowed by the drainage channels that have been drawn across it. How nearly the surface approaches a plain is seen from the following figures: Of 18 wells that are scattered over 4 to 5 square miles, the elevations of the casings above tide water range between 771 and 788 feet, and 11

of these well heads are between 779 and 784 feet above tide. The lowest water of the streams is about 10 feet below the lowest well, or 761 feet above tide. There is probably no point within 4 to 6 miles of the town on either side that attains an elevation of 800 feet.

Underneath the surface, this uniformity is lost, and the following facts appear: On the east side of the town, the Trenton limestone is found in a terrace a little more than 300 feet below sea level. In four wells drilled here, the extremes of which are nearly one mile apart, the upper surface of the limestone is, according to the facts reported, 306, 312, 314, 314 feet below the sea.

To the westward from this terrace, there is a sharp descent to another flat floor of Trenton limestone. To the northward also, there is a descent, but not as marked as the former. The highest westward dip is at the rate of 261 feet to the mile, which stands for a slope of about 3°. It never continues for a mile at this rate, however. It may be added that the limestone floor of the river shows, at a few points in the town, a similar dip, but the exposures are small, and no consideration was heretofore given to them on account of their isolated character. This lower floor of the Trenton is about 475 feet below tide. The main line of strike runs through the town at an angle of N. 14 W.

The wells of the upper terrace all produce dry gas, but in moderate amount. None of them probably exceeds 250,000 cubic feet in a day. As the subterranean slope begins, the wells that are located upon it gather strength and volume. There is but a single apparent exception to this statement. The great wells have all found the Trenton limestone between 330 and 350 feet below sea level, as is seen in the appended table:

	Trenton Limestone. Below Sea Level.
Karg	347
Co y	350
Briggs	330
North Findlay	342
McManness	337
Jones	328

When the Trenton limestone is found at 400 feet below the sea, oil and gas are both produced, but the oil tends to increase at the expense of the gas. The following wells illustrate this statement:

	Trenton Limestone. Below Sea Level.
Adams well	405
Barnd well	403
Lima road well	394

Where the Trenton limestone is found more than 450 feet below the sea, the well yields either oil or salt water, though gas may still be produced in considerable amount. The following wells illustrate this statement:

	Trenton Limestone. Below Sea Level.
Putnam street well	452
Matthias well, No. 1	481
Matthias well, No. 2	470
Firmin well, No. 1.	470
Taylor well, No. 1	480

The Putnam street well was abandoned, but it gave promise of being a small oil producer. But little gas appeared in it, and it would have been necessary to pump the oil. The Matthias well, No. 1, has already been referred to. It is the well that flows 35 barrels of oil per day. The Matthias well, No. 2, and the Taylor well are both fairly productive.

5. Findlay gas now supplies the town, from the tea-kettle and street lamp to the mill, the glass house, the machine shop and the factory. The Natural Gas Company that drilled the Pioneer well, has been absorbed by the Findlay Gaslight and Coke Company, which, under sagacious and energetic management, has obtained a strong hold upon this new found source of wealth. Fortune has also been propitious in giving to this company the Karg well.

The rates that the company has established are as follows, in part:

For cooking stoves, $1 per month; sitting room stoves, $1.50 per month; grates, $2 to $2.50 per month; house lights, 15c to 30c per month; boilers, from $150 upwards per year; patent lime kilns (draw kilns), $100 per year.

Other parties, individuals and companies have drilled wells also, and the work is still going forward. The latest phase is a proposition to bond the town for $40,000, to lay pipes and drill wells, if necessary, to supply gas at cost. This proposition has been submitted to a popular vote, and has been carried by an overwhelming majority. If carried into operation, it would seem to threaten the investments of the corporation that has mainly developed the field thus far.

There has been a deplorable waste of the gas during the last year. This was perhaps a necessary consequence of the conditions under which the development was going forward. In the spring of 1886, there was for months a daily waste of at least 16,000,000 cubic feet of gas. At the rate of value previously determined, viz.: 8 cents to 1000 cubic feet, this would aggregate a daily loss of $1,280.

These losses should no longer be allowed. The town and the immediate neighborhood give the best of promise of containing a vast supply, but it must not be forgotten that it is stored power. There is, in reality, a measurable amount of oil and gas available, and when this is gone, all is gone. No renewal will follow. Public policy would restrict the number of wells. The more openings the more waste, the more rapid the reduction of pressure and the sooner will come the inevitable exhaustion of the field. When the great flow of the Karg well was unlocked, other wells, a third of a mile away, were seriously influenced by it. The Adams well lost much of its gas, while the production of oil rose in it from 5 barrels per day to 15 or 20 barrels per day. Even the Karg well itself has begun to throw oil in spray occasionally.

6. The inference that all the enterprising towns of Northern Ohio were quick to draw when Findlay first "struck gas," viz.: that inasmuch as they were severally underlain by upper Silurian limestone as Findlay is, their chances to obtain the new fuel were as good as Findlay's, is seen to be unfounded. The occurrence of gas and oil in Findlay are associated with an anomalous and most surprising departure from the regularity that in general characterizes the rocks of the State, and the whole question is seen to be a geological one, after all.

THE BOWLING GREEN FIELD.

Bowling Green, the county seat of Wood county, situated twenty-four miles due north of Findlay, was the next town to try the fortune of the drill, beginning the work in February, 1885. The Niagara limestone underlies the town as it does a large part of Findlay. The face of the country, however, slopes gently to the northward, and the level of the town is from 80 to 90 feet below that of Findlay.

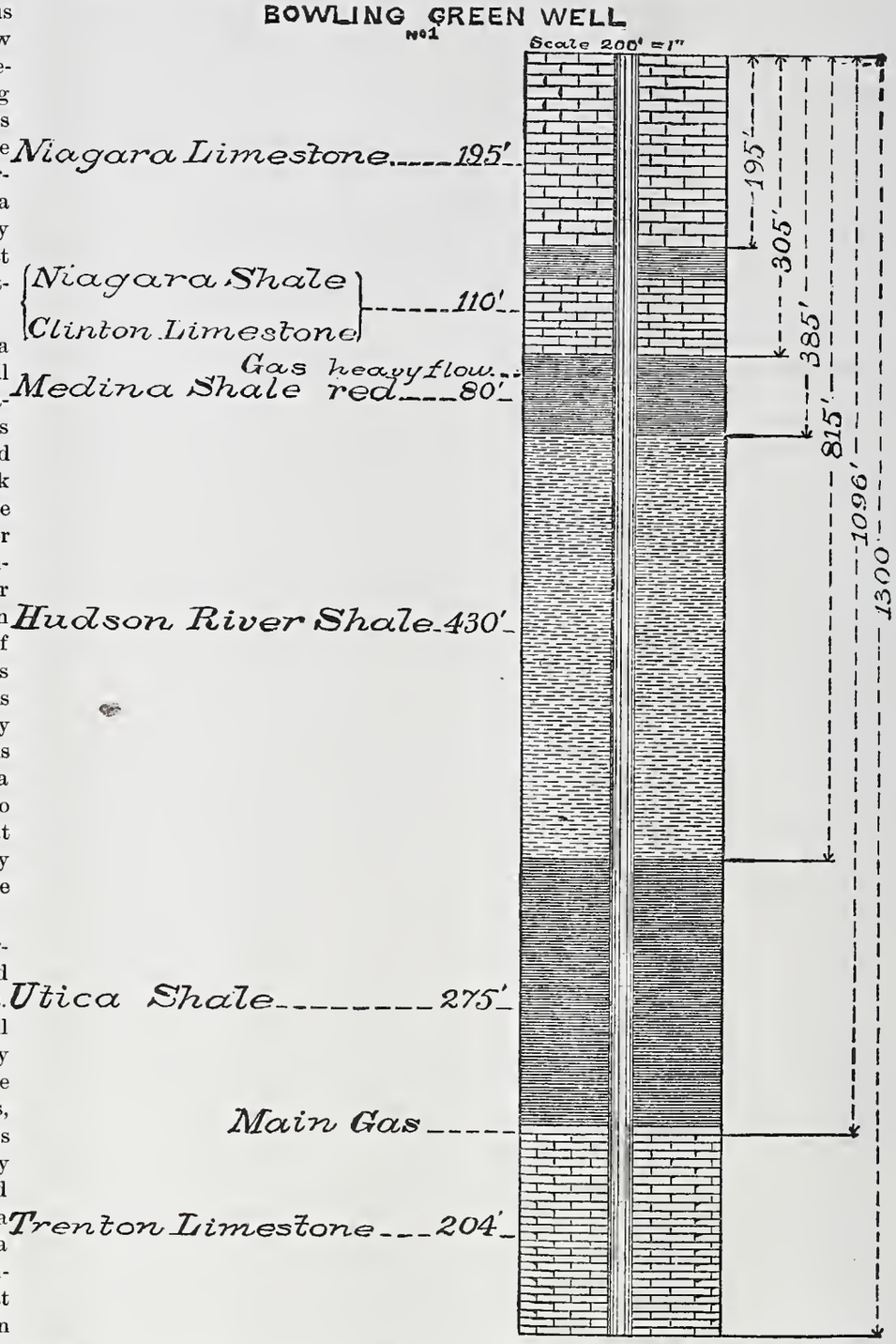
	Above Tide.
Findlay, Lake Erie & Western Railroad Station	782 feet
Bowling Green, To ed & Southern Railroad Station	703 "

The record of the drilling shows an almost exact correspondence with the Findlay records already given. There were 300 feet of upper limestones, interrupted by a thin belt of Niagara shale; there was 80 feet of Medina shale, mainly red in color, about 400 feet of Hudson river shale, about 275 of Utica, and Trenton limestone at

1096 feet, its surface being thus seen to be about 400 feet below sea level. All this is represented in the accompanying diagram. There were vigorous blowers of gas struck as the drill descended, and one in particular, at 330 feet in the Medina shale, but probably in a sandy layer, sent out a blaze 30 feet high at first, but exhausted itself in about sixty hours.

The Trenton yielded but a very small supply of gas until it was torpedoed. This operation considerably improved its flow. The company that drilled the first well proceeded to sink other wells and to pipe the town so as to furnish gas for general use, and for the burning of lime, but for a year, their stock of gas was short. In March, 1886, one mile south of the town, the first vigorous well was found. This well is comparable with the Findlay wells of the third order. It is doubtless good for more than a million feet per day. Two miles still further south, at Portage, another good supply was found at about the same time.

Bowling Green has been fortunate in not finding good wells inside the town limits. Had such been the case, a well might have gone down on every lot, and the supply would have been frittered away. As it is, the productive field being thus far a mile distant, the company that has drilled the wells and piped the town has virtually a monopoly, which, in such a case, clearly tends to the general good. Gas is furnished at rates about one-third less than the cost of wood or coal, to do the same work, let alone the saving of trouble and expense attending to the use of the new fuel. The charges are in part as follows:



House lights, 20 to 30 cents per month; cooking stoves, $3 per month in winter; heating stoves, $3 per month in winter; lime burning, one cent per bushel.

Four draw kilns of the best pattern have been built here for the last named use, the preliminary experiences have been successfully passed, in the main, and a good quality of magnesian lime is being produced here at a cost that threatens the extinction of this large interest throughout the rest of Northern Ohio.

There has not been drilling enough around Bowling Green to show fully what it owes to unusual geological structure, but an exceptionally heavy dip is known to begin upon or near its western boundary. The Trenton limestone descends in going due west from Portage to Weston, a distance of about seven miles, from 400 feet to 900 feet below sea level. Just how this average dip of 70 feet to the mile is distributed does not now appear. It would seem that there is room for remarkable developments in this interval.

OIL REGION CHRONOLOGY.

For November, 1886.

November 1.—Age oil report shows 279 wells completed in October, 62 of which are dry; new production, 6574 barrels; new rigs, 142; old rigs, 132; wells drilling, 319; total field operations, 593; increase over last month, 12. Market opened at 66¼c, weakened to 65¾c; reacted to 65⅞c, broke to 65¾c and closed at 65¾c bid. Carrying rates 50c to 60c. Washington gauge 10,365 barrels. Willets, No. 13, gets first pay streak and starts at 11 barrels an hour. Well of Manufacturers' Gas Company, at Cannonsburg, reported showing oil. Lima—Report for October 31 shows 174 producing wells, with a production of 7692 barrels.

November 2.—Election day. Market very quiet; opened at 65⅞c, the highest, and closed at 65¾c, the lowest point of the day. Carrying rates—Pittsburgh, 45c to 50c; Oil City and Bradford, 60c; no market at New York. Washington—Barre, No. 4, 35; No. 5, 10; No. 6, 35 barrels an hour. John Hooley, advance agent of the Rag Baby combination, commits suicide at Olean.

November 3.—Market opened at 66c, fell off to 65¾c, firmed up to 66c and closed at 65⅞c bid. Carrying rates 50 to 65c. Washington gauge 9900 barrels. Shannopin 3200 barrels. Weaver well, on Andrews lot, in sand with no oil.

November 4.—Market opened at 66c, firmed up to 66⅜c, broke to 66c, again advanced to 66⅜c and closed at 66⅛c bid. Washington gauge 10,400 barrels. Dye lot well strikes lower pay streak and starts up at 600 barrel rate; Smith, No. 5, makes 488 barrels first twenty-four hours after shooting; Barre, No. 4, 30; No. 5, 10 and No. 6, 28 barrels an hour; Caldwell well, on Van Kirk, five bits in sand without oil. Small fire in the Baptist church at Titusville.

November 5.—Market opened at 66¼c, the highest, and closed at 65⅝c, the lowest point of the day. Washington gauge 11,000 barrels. Davis, No. 3, starts flowing by heads. Dr. Stewart lot well made 381 barrels in twenty-four hours after shooting; Smith, No. 5, 27 barrels; Barre, No. 4, 28; No. 5, 10; No. 6, 25 barrels an hour.

November 6.—Market opened at 65¾c, sagged off to 65½c, and remained between these points all day, closing at 65⅝c. Washington—Chartiers & Andrews' well, No. 1, Wright, seven bits in Gantz sand with no oil nor gas. Production 11,070 barrels from 95 wells. Davis, No. 3, 125 barrels in fifteen hours. Beabout well, Cannonsburg, makes small flow from the Gordon sand. Roberts well, at Lima, O., burned with 2500 barrels of oil. Oil City subscribes $100,000 to start a manufactory of pipe.

November 7.—Sunday. First heavy fall of snow of the season.

November 8.—Market opened at 65¾c, made one move to 65⅞c, settled back and closed at 65¾c. Washington—McKeown, No. 1, on the Quail, is below the McGahey first pay streak with no oil Weaver well, on Andrews, 50 feet in sand without oil. Field production 10,500 barrels. Willets, No. 13, 235 barrels. Reed, or Bunghole well, 190 barrels past twenty-four hours. The Enterprise Milling Company starts at Oil City; flour mill to have a capacity of 200 barrels a day.

November 9.—Market opened at 65⅞c, and remained at that point until 2:30 p. m., when it advanced to 66c, and closed steady at 65⅞c. Washington—Van Kirk well reported a failure. Reported that Hukill is about to build a 25,000 barrel iron tank at his wildcat well in Greene county. Campbell's Bottling Works, at Bradford, destroyed by fire; loss, $1000.

November 10.—Market opened at 65⅞c, broke to 65½c, and about 2 p. m. it boomed to 66⅛c, settled back to 66c, firmed up to 66½c and closed at 66⅜c bid. Washington—Quail, No. 1, gets first pay streak and starts at 8 barrels an hour; No. 2, showing for a duster; McGahey, No. 3, 20 feet in sand with no oil. Field gauge 9800 barrels. Cannonsburg wells pronounced small producers. Shannopin gauge 4300 barrels.

November 11.—Market opened at 66½c, and about noon advanced to 67c, and then to 6[illegible]⅜c, it broke to 67¾c, rallied to 68½c and closed at 68c. Washington—McKeown, No. 1, Quail, estimated at 85 barrels; No. 2 a failure, and drilling abandoned at No. 3. Residence of Reuben Beeker, at Latrobe, Pa., blown up by explosion of natural gas; loss, $10,000.

November 12.—Market very active. The rapid decline in the Washington field and failure of the wells in the McGahey end of the pool bring about a more encouraging outlook, and oil advances from 68⅛c to 72⅜c, and closes at 71¼c. Washington—Mascot, No. 3, McGahey farm, 100 rods north of the old McGahey well, showing for a duster. Van Kirk well 70 feet in sand and dry. Production of field 9500 barrels. Quail, No. 1, declines to 40 barrels a day. Boiler exploded at a shingle mill, near Roystone, on the P. & E. R. R. Milton Mapes and little son instantly killed and three others seriously injured.

November 13.—Market opened at 71¾c, boomed to 72⅜c, and weakened to 71½c. It rallied at noon to 73⅜c, broke to 72½c, advanced to 74c, settled back to 73c, and a few minutes before 3 o'clock went up to and closed at 74⅜c. Washington—McGahey, No. 3, dry; Wright, No. 1, (Chartiers & Andrews), starts at a 100 barrel rate from top of fifty-foot. Many drilling wells in this part of the field abandoned on account of failures in that quarter. Gauge of field 10,453 barrels from 100 wells. Willets well, at Vanceville, reported showing oil, but has found nothing but gas. Nearly two feet of snow falls in McKean county. Will Long falls from a derrick at Shannopin, breaking an arm and a leg.

November 14.—Sunday. Washington—Chartiers & Andrews well, Wright farm, drilled all day without improvement; B. B. Campbells' No. 2 well, on Wade farm, 57 feet in sand with no show of oil.

November 15.—Market opened at 74¾c, went to 76c, then to 76⅞c, settled back to 76¼c, and then rallied to 77c. It sold off to 75c, and afterwards to 74¼c, and closed at 74¾c bid. Carrying rates—Bradford and Pittsburgh, 55c; Oil City, 60c; New York, 75c to 90c. Heavy business at the New York Exchange; nearly 19,000,000 barrels of oil changed hands. Two "lay-downs" at Oil City. Washington—Wade, No. 2, makes a small flow. Oil City completes the organization of the Oil City Tube Company and buys four and one-half acres of ground for the mill.

November 16.—Market opened at 74¾c, sold down to 74⅛c, reacted to 74½c and broke to 73⅛c. Heavy buyers then took hold and it rallied to 76⅛c, and closed at 75⅞c. Washington—Wade, No. 2, showing for a 50 barrel well; Quail, No. 1, shot with no improvement. Field gauge 9900 barrels. Wright, No. 1, makes 100 barrels last twenty-four hours.

November 17.—Market opened at 76⅞c, advanced to 77¼c, settled off to 76⅜c, reacted to 77c, broke to 75⅜c, and closed at 75½c. Washington—Van Kirk well shot with no improvement; Wade, No. 2, made 80 barrels last twenty-four hours.

November 18.—Market opened steady at 75½c, followed by sales at 75⅝c, and sagged off slowly to 75¼c. It weakened to 74¾c, rallied to 75⅜c and closed at 75c bid. Washington—Willets, No. 17, through sand and showing for 80 barrel well; Montgomery, No. 3, nearly through sand and showing for a 10 barrel pumper; Fergus, No. 1, through sand and doing 35 barrels a day. Heavy storm blows down many rigs in the Bradford field.

November 19.—Market opened at 75⅛c, declined to 75c, and then advanced to 75½c. Near the close it weakened to 75⅛c and closed at 75¼c. Washington—Willets, late wells on Munce farm, show great drainage and refuse to flow when drilled through the sand. John

G. Curtis' residence, at Ludlow, destroyed by fire caused by natural gas; loss, $4500.

November 20.—Market opened at 75¾c, the highest point of the day, two points above the opening in the other Exchanges. At 2 p. m. 75c was bid, from which it broke to 74⅜c and closed at 74½c. Washington—Field gauge 9643 barrels from 104 wells. Largest wells, Barre, Nos. 4 and 6, doing 540 barrels each per day; Davis, No. 2, 560; Willets, No. 9, 460. C. D. Robbins' well, at Bridgeville, Allegheny county, through sand and dry. Marks, No. 3, Shannopin, starts at 100 barrels an hour. Oil strike reported on "Bitters" Smith farm, seven miles from Pittsburgh. Louis Goodman and Charles Pilk, two peddlers, of Bradford, killed by a switch engine, near Rassellas, on the B , R. & P. R. R.

November 21.—Sunday. James Lefford probably fatally injured by the bursting of a bull wheel at Thayer, No. 6, Washington. Phillips Bros'. well, Spithaler farm, Reibold, doing 10 barrels an hour. Marks, No. 3, Shannopin, averaged 61 barrels an hour for four hours.

November 22.—Market opened weak at 74¼c, sold off to 74c, reacted to 75⅝c, and broke to 74⅞c. About 2:45 p. m. it boomed to and closed at 77¾c. Washington—Barre, No. 5, increased to 34 barrels an hour by shooting. Jared B. Preston, aged 18 years, killed by being caught in the bark hopper at the Limestone tannery.

November 23.—Market opened at 78⅜c, and sold off rapidly to 77¼c. It reacted to 78⅛c, declined again to 77¼c, and at 1:45 p. m. went up to 79c. It again weakened, selling down to 78⅜c, rallied to 79c, sold off to 77¾c, advanced to 78c, but during the last ten minutes sold down and closed at 77¼c. Carrying rates—Bradford, 55c to 60c; New York, 80c to $1; Oil City, 60c; Pittsburgh, 60c to 80c. Washington—Production 9758 barrels. Derrick at Leidecker Bros'. well, Reibold, destroyed by fire.

November 24.—Market opened weak at 76¾c, rallied to 77c, sold off to 76½c and advanced to 77⅝c. It again sold off to 76½c, reacted to 77⅛c, weakened and closed at 76⅜c bid. Carrying rates advanced to $1.50 per 1000 at New York this morning. Washington production 9700 barrels. Morgan, No. 5, through fifty-foot and made 200 barrels the past twenty-hours. Phillips Bros'. well, on the Spithaler farm, Reibold, by deeper drilling improves to 20 barrels an hour. Walter W. Sawdy, of Clarendon, seriously injured by accidental discharge of a rifle, which shatters his left arm.

November 25.—Thanksgiving Day. No market. Washington production 9000 barrels. Munhall, No. 3, R. D. Wylie farm, nearly through the sand and a strong gasser; Central, No. 1, Martin farm, 75 feet in the sand and doing 300 barrels a day.

November 26.—Market opened strong at 77c and advanced to 78⅜c. It sagged off slowly to 77⅜c, rallied to 78c, vibrated between 77⅝c and 78⅛c, and closed at 77⅞c. Phillips Bros., Reibold well, down to 12 barrels an hour; No. 3 made 200 barrels first eighteen hours; Leidecker, 8 barrels an hour. Michael Fitzgerald, of Tarport, aged 50 years, drowned in Fisher's dam, near Bradford. Bradford stops paving Main street on account of the wintry weather, and planks over the unfinished portion to the railroad.

November 27.—Market opened firm at 78¼c, declined to 78c, advanced to 78½c, weakened to 77½c and closed at 78c. Carrying rates 55c to 65c. Washington—Field gauge 9092 barrels from 109 wells. Barre, No. 4, 528; No. 5, 672; No. 6, 480; Davis, No. 2, 530; Dye lot, 210; Wade, No. 2, 30; Thorne, No. 1, 60; McGahey, No. 1, 150. Taylorstown well, 80 barrels.

November 28.—Sunday. Reibold, Leidecker well reported doing 300 barrels; Phillips, Nos. 1 and 3, 900, and Phillips, No. 2, showing for 400 barrels a day. Fred Powell suffocated by gas at Lima Drilling Company's No. 2, on the Spear farm, near Lima, O.

November 29.—Market opened at 78⅛c, advanced to 78⅜c, sagged off to 78c, and later declined to 77¼c, closing at 77⅝c. Carrying rates 55c to 65c. Washington production 8750 barrels. Rig at Barre, No. 12, burned. Phillips wells, on the Spithaller farm, Reibold, doing respectively, No. 1, 13; No. 2, 6, and No. 3, 11 barrels per hour. Leidecker stopped by salt water. Spear well, No. 2, Lima, reported to have increased from pumping 75 to flowing at 700 barrels a day.

November 30.—Market opened at 77⅞c, and vibrated between ⅞c and ⅝c for three hours. About 1 p. m. it advanced to 78⅞c, declined to 78⅜c, advanced to 79¾c, broke and closed at 78⅝c bid. Carrying rates—Bradford, 55c to 60c; Oil City and Pittsburgh, 55c; New York, $1. Washington—McGahey, No. 4, 40 feet in sand with lots of gas and little oil; Wright, No. 2, nearly through sand without oil; Thorne, No. 1, doing 25 barrels a day; No. 2, has stopped drilling. Production of field 9000 barrels.

The Refined Market.

The November export trade in refined oil has not been fully up to expectations. Stocks abroad are very small, but notwithstanding this fact, the European buyer continues his cautious attitude with respect to American refined. Prices were advanced on the 4th of the month from 6⅝c to 6¾c for 70° Abel test, and on the 11th another ⅛c was added to the quotations. On the 13th the refiners demanded 7⅛c, but on the 17th prices were reduced to 7c, which remained the asking figure for the rest of the month. A scarcity of ocean tonnage is reported, and ocean freights are higher, which has had something to do with restricting the amount of the export trade. The lessening of the stocks abroad and the advance in refined at New York and Philadelphia, has brought about a strengthening of the foreign market, and it now appears as if the danger from any serious competition, on the part of Russia, was at an end, at least for the present season.

The exports of refined, crude and naphtha, from all ports, from January 1 to November 27 have been as follows:

	1886. Gallons.	1885. Gallons.
From Boston	5,266,642	8,026,681
Philadelphia	138,361,181	139 245,870
Baltimore	14,208,859	10,520,087
Perth Amboy	5,648,102	-------
Total	163,484,784	157,792,638
From New York	358,045,652	337,262,316
Total exports from United States	521,530,436	495,054,954

In refined for the home trade the business has continued fair, and is fully equal to that of previous years. Quotations are 8¾@9c New York State legal test, 7⅜@7½c for 110° test, 8¼c for New York city 110° flash, and 9¾c for New York city 150° water white. Western lots are offered at 7½c for 110° test Standard white, 7¾@8c for 120° test Standard white, 8½@9c for 130° test Standard white, 9⅛@9¼c. for Standard test and 9⅜@9½c. for 150° test water white. Western naphtha 68° to 72° test is quoted at 7¼@7¾c. delivered in New York. The demand for refined in cases has improved over last month, with quotations of 8¾ to 9¾c., according to brand. The clearances for November in this class of goods to China and the East amounts to

1,059,191 cases, an increase of 399,195 cases over the same month in 1885. The total clearances up to November 30 are 11,228,291 cases, an increase of 2,074,698 cases as compared with the corresponding period of the previous year.

Mr. George H. Lincoln's monthly circular gives the following figures on the clearances of refined petroleum, in cases, for China and the East up to the 30th of November, for the years 1885 and 1886:

	1886. CASES.	1885. CASES.
CHINA	2,291,357	2,549,754
JAPAN	1,516,912	1,853,547
INDIA	3,922,667	2,482,881
JAVA, SINGAPORE, ETC.	3,497,355	2,267,411
[illegible] THROUGH 30	11,228,291	9,153,593
[illegible]	10,169,100	8,493,597
Clearances for [illegible]ber	1,059,191	659,996
Clearances for [illegible]	622,514	872,562
Clearances for Se[illegible]ber	283,751	658,336
Clearances for August	549,916	718,533
Clearances for July	1,028,427	846,668
Clearances for June	1,419,352	1,116,314
Clearances for May	1,164,532	917,200
Clearances for April	1,342,478	582,417
Clearances for March	1,458,609	1,000,936
Clearances for February	1,183,563	901,466
Clearances for January	1,115,958	879,165
Total	11 228,291	9,153,593

REFINED QUOTATIONS FOR NOVEMBER.

	New York	Philadelphia	Baltimore	London and Liverpool	Bremen	Antwerp
	Cts.	Cts.	Cts.	Pence.	Marks.	Francs
1	6⅝	6⅝	6⅝	5⅝	6.30	15¾
2	6⅝	6⅝	6⅝	5⅝	6.30	15¾
3	6⅝	6⅝	6⅝	5⅝	6.30	15¾
4	6¾	6¾	6¾	5⅝	6.30	15¾
5	6¾	6¾	6¾	5⅝	6.35	15¾
6	6¾	6¾	6¾	5⅝	6.35	15¾
7						
8	6¾	6¾	6¾	5⅝	6.35	15¾
9	6¾	6¾	6¾	5⅝	6.40	15¾
10	6¾	6¾	6¾	5⅝	6.45	15¾
11	6⅞	6⅞	6⅞	5¾	6.45	16
12	7	7	7	5¾	6.60	16⅛
13	7⅛	7⅛	7⅛	5⅞	6.60	16½
14						
15	7⅛	7⅛	7⅛	5⅞	6.70	16½
16	7⅛	7⅛	7⅛	5⅞	6.75	16½
17	7	7	7	5⅞	6.75	16½
18	7	7	7	5⅞	6.70	16½
19	7	7	7	5⅞	6 65	16⅜
20	7	7	7	5⅞	6.70	16½
21						
22	7	7	7	5⅞	6.75	16½
23	7	7	7	5⅞	6.80	16½
24	7	7	7	6	6.80	16⅝
25						
26	7	7	7	6½	6.75	16⅝
27	7	7	7	6¾	6.85	16⅝
28						
29	7	7	7	6¾	6.90	16¾
30	7	7	7	6¾	6.90	16¾

THE Economites are stated to be about forming a company to supply the Beaver valley towns with natural gas. It will be in opposition to the Bridgewater Company, and will secure its supply from the Economite lands, along the Ohio river.

A SECOND well is being drilled, near Oxford, in Benton county, Indiana, by a syndicate of Chicago capitalists, who have leased 1500 acres of land. Gas was found at a depth of 100 feet, but the well will be sunk to a depth of 1500 feet. The first well is still producing gas in considerable quantities.

A GAS strike is reported at Nelsonville, in Athens county, Ohio.

BLUE print maps of the Ohio oil fields to be had at the AGE office.

GEOLOGIC DISTRIBUTION OF NATURAL GAS IN THE UNITED STATES.*

BY CHARLES A. ASHBURNER, GEOLOGIST IN CHARGE PENNSYLVANIA SURVEY.

ALTHOUGH natural gas springs are to be found in almost every State in the Union, and in many States gas has been obtained in wells sunk either for water, oil, gas, or as solid mineral prospecting holes, yet the occurrence of natural gas is not dependent upon mere chance, as is popularly supposed, but is, as is now beginning to be recognized by both professional and practical men, a result of special geological phenomena.

The desire among our leading manufacturers to emulate Pittsburgh has led to the sinking of many wells in many localities in search of natural gas; some of these wells being located and drilled under the direction of professional experts, but many more being located by persons who are ignorant of the conditions under which gas has already been found, and by "quack" explorers, who often depend upon spiritualistic communication or the divining rod.

The literature on the subject of the geographical occurrence of gas, except in areas contiguous to the Pennsylvania oil regions, is very meager, and scarcely anything has been published on the geology of natural gas, except that contained in the reports of the Pennsylvania Survey, of which Mr. Carll has been the leading author. In considering the geologic distribution of gas in the United States, I have not sufficient facts at present in my possession to make a paper on the subject complete or exhaustive.

The practical application of natural gas, in various forms, in Western Pennsylvania, has opened up a new era in fuel economy and the development of heat and mechanical power, and it becomes a practical necessity for every community where there is the slightest possibility of finding natural gas to make a thorough and intelligent exploration for it; and for all other communities, in which, from the geological conditions of the underground structure of their region, it is impossible for the rocks to contain gas in commercial quantities, to plan to manufacture a fuel gas. There is no doubt in my mind but that the greatest advance to be made in the practical arts and sciences during the next two decades is to result from a practical consideration of the question of the manufacture and utilization of gaseous fuels, and the adaptation of plant and machinery to the new fuel relations that I believe we are bound for economy's sake to establish.

It is difficult to prescribe any fixed limits in the geological scale to the occurrence of natural gas and petroleum. Every known rock, with the exception of the eruptive rocks, is known to contain the remains of organic matter (vegetable and animal); and since the leading geologists agree in the opinion that both oil and gas result from the decomposition of organic remains, it is quite possible to find gas and oil in rocks of any geological age, in some rocks in commercial quantities, and in other rocks in quantities so small as to be only of scientific interest to the geologist and mineralogist.

Next to the necessity of having a sedimentary rock in which animal or vegetable remains of past geological ages have been buried, the presence of gas is dependent upon the existence of a porous or cavernous rock to serve as a reservoir to hold the gas, and an overlying

* Abstract of a paper read at the St. Louis meeting of the American Institute of Mining Engineers, October 12, 1886.

impervious rock roof to confine the gas. The other necessary conditions for the occurrence of gas are more dependent upon the forces to which the strata have been subjected, and the resulting geological structure, than upon the age of the rocks themselves.

The tendency among practical oil and gas well drillers and operators to discover, in a new district where a well may be drilled, the same section of rock as is found in an old district, makes it important that both drillers and operators should realize the fact, as proved by geological investigation, that no two wells can be put down, distant from one another but five miles, more or less, where the same section of rocks may be found in both wells.

All the oil and gas horizons in Pennsylvania are located in sandstones and shales, from the Portage up to and including the Coal Measures. In Ohio, the oil and gas horizons are included in the Paleozoic strata, from the Upper Coal Measures down into the Trenton Limestone. In New York, where natural gas is more generally distributed, as indicated by gas springs, than in either Pennsylvania or Ohio, but where much less has been found in commercial quantities, the gas horizons are found in the formations from the Chemung down to the Hudson river shales, inclusive, with the possibility that some may be found in the Trenton Limestone.

On account of the intimate connection existing between oil and gas, it is reasonable to suspect the existence of natural gas in all sandstones producing oil.

The amount of gas that is at present flowing from the explored sands in Pennsylvania is probably two or three times greater than is required to meet all present demands. With an appreciation of this fact, and of the possibility of extending the gas pools and developing new ones, very little alarm should be entertained as to the exhaustion of the gas sands of Pennsylvania and the prostration of the manufacturing interests that become dependent upon its use. It becomes, however, a question of vital importance to the Commonwealth of Pennsylvania and to every citizen interested in the industrial concerns of the State, that the extravagant waste of gas that is now going on everywhere throughout the oil and gas region should be stopped. The action of the Philadelphia Company, which is now one of the largest natural gas companies in Pennsylvania, in shutting in the wells all the surplus gas that is not needed, should be emulated by every individual who has pecuniary interests in gas wells, and it is a question that should be settled by our State Legislature, by compelling all gas well drillers and operators to shut in the gas that is not needed.

The discovery of natural gas in Ohio is the dawn of a most important era to the manufacturing and industrial interests of that State. This statement is worthy of special reference here. Any comparison as to the amount of gas that Pennsylvania and Ohio respectively will be able to produce in the future would be invidious, and in fact we have not sufficient evidence upon which to base any reliable conclusion That there is sufficient gas in Ohio, as well as in Pennsylvania, to meet the demands of manufacturers for a number of years, and sufficient in many localities to warrant the erection of new plants, there is no doubt; but still it is well to bear in mind that our gas supply is exhaustible, and that in the main all the gas that we can hope to obtain in the future now exists in a gaseous form confined in our rock reservoirs. When these reservoirs are emptied, our supply will have ceased.

POCKET maps of Warren county on sale at AGE office.

The Macksburg Field in November.

The production of the Macksburg field, estimated from the pipe line runs, the shipments of the West Virginia Transportation Company, etc., averaged about 229 barrels a day for 1884. The gross runs of the Macksburg pipe line since January 1, 1885, with the estimated amount of oil shipped from the field through other channels is given below. The averages represent the best obtainable figures on the production of the field:

1885.	Macksburg P. L. Runs.	Outside Shipments. Est	Daily Average Production.
January	11,894	1500	432
February	20,625	1500	790
March	27,067	1500	922
April	40,527	[illegible]	1400
May	48,258	[illegible]	[illegible]
June	64,982	[illegible]	[illegible]
July	75,737	[illegible]	2492
August	74,228	[illegible]	2443
September	68,110	[illegible]	2320
October	63,619	[illegible]	2278
November	60,926	[illegible]	2264
December	61,113	[illegible]	2197
Total	617,086	34,500	1785
1886.			
January	54,806	7000	1994
February	49,694	7000	2025
March	58,795	8973	21[illegible]6
April	64,137	7890	2401
May	58,5[illegible]6	66[illegible]0	2104
June	65,379	2871	2275
July	58,410	4080	2016
August	57,492	2790	1945
September	4[illegible],918	1240	1672
October	46,937	3240	1619
November	41,359	4090	1515

During November there were one shallow and three deep wells completed in the Macksburg field, with a production of 40 barrels. A deep dry hole was also completed, by Jacob Abendschein, about two miles southeast of Elba. On the last day of the month there were 3 wells drilling, 5 rigs up and 2 rigs building. In October 4 wells were completed, and on October 30 there were 7 drilling wells under way. On November 30, the number of producing wells in the Macksburg field was 459, with an average daily yield of 3⅓ barrels.

There are 6 wells drilling and 2 rigs up and building at Eureka, West Virginia, and 1 well drilling at French Creek, one and a half miles above Eureka, on the same side of the river. In Washington county, on the opposite side, and about six miles farther up the river, on Ray's Run, Craig, Cappeau & Lowery, have started drilling a well. The Cambridge Gas and Oil Company completed well No. 3 in November; it had a slight showing of oil and gas, about the same as the first two drilled.

Oil and Gas Enterprises.

The Natural Gas and Oil Company, of East St. Louis, Ill., has been incorporated, with a capital of $1,000,000. C. W. Spalding and William N. White, incorporators.

The Grapeville Natural Gas Company, of Pittsburgh, has been incorporated, with a capital of $100,000, to supply gas from the Grapeville wells, through certain sections of Westmoreland and Allegheny counties.

The Confidence Gas and Oil Company, of San Francisco. has been incorporated, with a capital of $25,000. Incorporators are Justin Gates, J. D. Bodwell, Henry Dapel, W. H. Davis and H. B. Mayhew.

The Sandusky Natural Gas Company, Sandusky, O., has been incorporated with a capital stock of $300,000. Messrs. J. O. Moss, Clarke Rude, J. F. Mack, Charles H. Moss and C. C. Keech, incorporators.

The Citizens' Oil and Gas Company, of Defiance, O., has been incorporated, with a capital of $10,000. Messrs. P. Kettenring, Andrew Sauer, F. Kratz, E. P. Hooker, William Martin and others, are corporators.

THE PETROLEUM AGE,

DEVOTED TO THE

INTERESTS OF THE PETROLEUM TRADE.

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THE PRODUCING REGION.

At the begin[illegible] November there were 142 new rigs and 319 drilling [illegible] the New York and Pennsylvania oil regions, [illegible] of 461. The number of wells completed in November was 216, with an estimated new production of 5361 barrels. The dry holes numbered 45, leaving 171 productive wells, with an average yield of above 31 barrels each. During October the entire region completed 217 productive wells and 62 dry holes, and the average of the new wells was 30 barrels. The average of the September wells was 62, and of the August 48 barrels apiece. The November figures show a decrease of 63 completed wells and of 1213 barrels new production. At the close of November there were 104 new rigs, 152 old rigs and 285 drilling wells in the entire region, a total of 541, as compared with 142 new rigs, 132 old rigs and 319 drilling wells, a total of 593 at the close of October. This is a decrease of 38 new rigs and of 34 drilling wells, with an increase of 20 old rigs, or a total decrease of 52.

ALLEGANY FIELD.

There were four wells and five dusters completed in the Allegany field in November, against 15 wells and 5 dusters finished in October. Three gas wells were drilled in the town of Wirt, viz: two by the Empire Gas Company, on lots 52 and 60, and one by the National Transit Company, on lot 61. The Angell Oil Company completed a dry hole, on lot 3, Clarksville, while McQueen & Co. met a similar fate on lot 47, Wirt. The close of the month shows only 3 new rigs and 13 drilling wells in the Allegany field, with 37 old rigs, many of which have been standing for several years, and will doubtless never be drilled. On the last day of October there were 6 new rigs and 10 drilling wells in this field. In September, 1882, when the Cherry Grove excitement had produced its greatest effects, on the fields of the north, there were to be found 69 rigs and 38 drilling wells within Allegany's broad area. The Allegany pipe line runs dropped down to an average of 5260 barrels a day in November, as against 5885 barrels in October, 6035 barrels in September, 6333 barrels in August, 6802 barrels in July, and 6981 barrels in June. The average daily runs for November one year ago were 6667 barrels; for November, 1884, 8642 barrels; for November, 1883, 12,332 barrels, and for November, 1882. 16,993 barrels.

THE BRADFORD FIELD.

Bradford shows about the same amount of activity from month to month. In November 17 productive wells were completed with a yield of 126 barrels, and in October 17, with an output of 99 barrels. The only dry hole of the past month that properly belongs to the great Bradford field, is credited to Rose & McLeod, on lot 517, of the Bingham lands, along the Cole Creek frontier, Cheney & Co. drilled a duster, on the Richardson lands, in the Sugar Run region. The dry hole at St. Mary's, in Elk county, which was sunk for natural gas, has been included in the miscellaneous list of the Bradford region. F. W. Andrews has put down a test well, on warrant 2470, southwest of Smethport, which will have to be classed among the December list of dusters. The figures on operations for November 30, are 9 new rigs, 33 old rigs and 22 drilling wells. The section near Allegany, immediately north of Four-Mile, is again attracting a little attention. Stevens Bros. have succeeded in making the old Woodmansee duster produce a little oil, by means of a heavy shot, and have started drilling another well on the same farm. Conroy & Johnson are sinking a well on the Grador farm, in the same locality. A purely wilcat venture is in the sand, on lot 28, Cattaraugus, about four miles west of Limestone, and Parker & Nelson are experimenting for natural gas in the neighborhood of Silver Creek. The pipe line runs of the Bradford field averaged 24,690 barrels a day in November, 24,596 in October, 26,394 in September, 26,785 in August, 27,587 in July and 28,790 in June. For November, 1885, the runs were 29,117 barrels; for November, 1884, 29,552 barrels; for November, 1883, 34,516 barrels, and for November, 1882, 41,404 barrels.

WARREN AND FOREST.

There were 57 wells completed in the Middle field in November, 12 of which were non-producers of oil, and the new production was 558 barrels. This is a decline of 46 wells and 452 barrels production from the figures of October. On November 30 there were 20 new rigs, 26 old rigs and 59 drilling wells in the Middle field, against 32 new rigs, 24 old rigs and 59 drilling wells at the close of October.

KINZUA VILLAGE.—The development west of the Allegheny river, at Kinzua Village, supplied two first-class wells in November, and theorists for additional territory on that side are again in high feather. Smith, Bright & Co.'s No. 3 started at about 180 barrels, and Morse & Collins, White, No. 4, at above 100 barrels.

CLARENDON AND TIONA.—The advance in the market caused a slight increase in activity in these two sections, which cannot endure any length of time. McGrew Bros'. venture, on lot 683, Cherry Grove, proved a failure. Goal Bros. finished a fair gas well, on their property, near Watson's siding.

COOPER AND BALLTOWN.—Captain Haight & Co. found a five-barrel well, on the Tionesta, in the southwest portion of the Cooper district, while a few wildcats are under way beyond Balltown. The Cooper pipe line runs averaged 417 barrels and the Balltown 688 barrels a day in November.

KANE.—There were but nine drilling wells and one new rig in the Kane field on the last day of November. Twelve wells were completed during the month, with a new production of 200 barrels. Treat & Mallory's No. 4, on lot 344, struck a goodly volume of oil at a depth of 1600 feet, and is now producing eight or ten barrels a day from the upper horizon. Ryan & Ernhout are about making a second test on lot 341. The runs from the Kane field averaged 4112 barrels a day in November, 4505 barrels in October, 4709 barrels in September and 4842 barrels in August.

GRAND VALLEY.—The pipe line runs from the Grand Valley district show a production of 2089 barrels a day in November, against 2000 barrels in October and 2010 barrels in September. The count at the close of the month sums up 20 rigs and drilling wells, which is about the same amount as at the close of October. Most of

the operators have their lines well protected and are disposed to develop their territory very slowly.

THE WILDCATS.—Elk county still remains in a state rather unsatisfactory to its friends and sponsors. Clark & Foster found another small producer in November, while the Sill & Odell venture, on 3779, was a failure. The developments thus far number five producing wells, ranging from 2 to 8 barrels daily calibre, viz: S. B. Hughes & Co. one on 3663, Clark & Foster one on 2033, and one on 3664, Armstrong & Boggs one on 2032, and M. J. Feeley & Co. one on 3672. Besides these there is an old well of Hallock & Johnson, on 3663, that is producing a little oil, and Roberts & Windsor have a couple of small wells on 3561. These wells are scattered over a wide stretch of country, and have induced the drilling of numerous dusters in a vain attempt to discover the prolific field, of which they are supposed to furnish indications.

The National Transit Company completed four wells in November, on warrants 2695, 2675, 2723 and 2684, three of which were good gas wells and the fourth a dry hole. Berry & Co.'s venture, on warrant 5192, in Hickory township, has been pronounced a failure since the first of the month. Another well is going down in the same vicinity, while Shannon, Melvin and others are making a test of an immense tract of land in Forest county, south of the Tionesta.

THE LOWER COUNTRY.

There were 130 wells completed in the Lower Country in November, with a new production of 4636 barrels. Twenty-five of the number were destitute of oil in paying quantities. Butler aud Shousetown make up 52 of the wells and 3192 barrels of the total output. Washington, with 25 new wells, supplied only 1215 barrels. On the last day of November the Lower Couutry had 72 new rigs and 191 drilling wells, as compared with 91 new rigs and 229 drilling wells on the last day of October.

VENANGO.—Venango continues to furnish about the same amount of new work from month to month. Tipperary is the most active spot in the county, while Tarkill is gradually quieting down. Nickleville is credited with another dry hole, and prospects for valuable territory in that section are not particularly bright The daily runs from Red Valley have averaged as follows: January, 783 barrels; February, 1017; March, 1206; April, 1231; May, 1260; June, 1039; July, 1181; August, 940; September, 899; October, 778, and November 782 barrels. The total runs from this district to November 30 amount to 377,123 barrels. The production of the Tarkill field, as shown by the pipe line runs, has averaged about as follows: November, 1784; October, 1831; September, 2258; August, 3756, and July 4038 barrels. The Tiperary district averaged 154 barrels a day in October and 205 barrels in November. There were 39 wells completed in the Venango division of the Lower Country in November, and 8 of them were valueless for oil producing purposes. The new production is placed at 286 barrels. The record of active work shows 25 new rigs, 8 old rigs and 33 drilling wells for November 30, and 21 new rigs, 7 old rigs and 40 drilling wells for October 31.

CLARION.—The wildcat wells drilled in various parts of Clarion county during November, for gas or oil, were signally unsuccessful. Beason & Co.'s well near the Cherry Run camp-meeting ground failed to disclose the existence of the vapor which makes cheap fuel in some sections, and is rated among the dry holes. The Prospect Oil Co.'s well on the Amos Pollard farm north of Rimersburg was barren of gas and oil, and makes the second failure in the same section for the month. When the canvass for the monthly report was made John Deitrick & Co.'s wildcat well near Corsica was fishing in the sand. The test well at the mouth of Mahoning condemned territory for oil bearing purposes in this section. The Cogley field may become the ground of contention between rival pipe lines, but it is fast losing its importance as a producing area. The pipe line runs for November showed a daily average of 1636 barrels, against 1840 barrels in October. There is a small amount of drilling at Cogley—about Shippenville and along the eastern side of the old belt near Elk City. Fourteen wells were completed in November having a new production of 43 barrels. Five of the wells finished add that number to the list of dusters.

BUTLER AND ARMSTRONG.

At this writing, Dec. 10th, considerable interest is centering in that portion of Butler county along the Pittsburg & Western railroad between Reibold and Callery Junction about six miles to the southwest. This railroad which traverses the oil country is being made the base line of oil operations between the two points mentioned. When the Lappe well on the Behm farm, about 800 feet west of the tunnel, was completed and demonstrated the existence of 57 feet of sand Phillips Bros. began to lease a belt of country along this road and on a 45 degree line to the southwest. Up to date the work of development is being prosecuted successfully on the old time line to the southwest. Starting with a 90-barrel well on the S. H. Critchlow farm, about 50 rods southeast of the old Reed dry hole, the streak has been prolonged or extended 200 rods to the southwest to the large wells on the Spithaller and Heid farms. By actual gauge the writer has found the best wells on the Spithaller farm to be producing 350 barrels each per day when they were ten days old and at its best the Phillips Bros. No. 3 ou the Spithaller farm is reported to have produced between 500 and 600 barrels in 24 hours. The Leidecker Bros., who had a hand in manipulating that guy on the oil trade known as the "midnight mystery on Rough Run," come iu for a fair share of credit in shaping and extending the Reibold pool. Their No. 1 well on the Heid farm, across the Connoquenessing creek from Phillips Bros. No. 3 ou the Spithaller, tapped the sand Saturday evening, Dec. 4th, and the well began flowing duriug the forenoon of the following day. After being drilled to a depth of 18 feet in the sand the well produced at the rate of 75 barrels per day. Deeper drilling on the evening of December 7th gave the well an average production duriug the following day of 15 barrels per hour. Since that time the sand rock has been penetrated to a greater depth and the production is reported to have been raised to 500 barrels. The Phillips Bros. No. 1 on the same farm, and about 125 feet to 150 west of the Leidecker well, is a smaller well when the same distance in the sand, which is reported to be of inferior quality It is producing about 150 barrels per day from the level which afforded 350 at the Leidecker gusher. But deeper drilliug may change the verdict on this well. Thus far the streak has not met with any interruptions in its southwest course, but its length and the magnetic bearing of the axis of the belt which the drill will shape are two things which it must be given time to determine. One thing is certain, the dry hole of Phillips Bros. on the John Dickey farm and the five-barrel well drilled by the Fisher Oil Co on the Dickey heirs, take away the chances for an extension on a 45° line, in a northeasterly direction from the first wells of Phillips Bros. on the Slater and Critchlow farms. Phillips Bros. have an important

well drilling on the C. Markle farm on the west side of the high trestle which spans Glade Run. It is about a half mile in advance of the producing wells on the Spithaller farm. It was drilling in the top of the 100-foot on the 7th of December. The Breakneck Oil Co. have a well drilling on the Widow Craft farm near Callery Junction. They found a small amount of oil in the 100 foot, which has been cased off with the salt water. This well is due to the sand a number of days before the December Age will reach its readers. It is on a good range with the Reibold pool, but a long way in advance of developments. Quite a large amount of land has been leased around it. Thomas Phillips is doing some fine figuring on the crude prospects of the country to the southwest of the Reibold wells. The heavy body of sand found at the tunnel wells leads him to conclude there is more oil and paying wells in this section of the country. The test well drilled by Leidecker Bros. on the Gelbach or Galesbaugh farm on Glade Run is 100 rods up the creek from the Glade Run trestle and on the south side of the railroad. This well had a showing of oil and 51 feet of sand. The Boyd well on the Goehring farm is one mile in a northwesterly direction from the Gelbach farm well and totally dry. The rock formation was poor at this well and the sand was only 13 feet in thickness, and even this depth of sand is disputed. A belt to the southwest must pass between the Leidecker well on the Gelbach and the Boyd well on the Goehring. To get by the tunnel well it must go between two wells about 75 rods apart or pass on one side of them. The Reibold pool may be terminated a short distance beyond its present limits and others may be discovered on the range to the southwest where the sand rock is known to exist. At the close of November operations were fairly active in the Hickory district and a small amount of new work was being done at the southeastern end of Thorn Creek.

SHOUSTOWN.

The Raccoon Oil Company's No. 3, on the Marks farm, situated about 800 feet north of No. 1, started at 100 barrels per hour when it was drilled into the sand on the afternoon of November 20th. On the morning of 22d it was flowing steadily, but had declined to 45 barrels per hour. The gauge on the company's books for December 1st showed a production of 630 barrels. This well is very gassy and indicates that the line between the gas and oil is near at hand on the north. It now seems that it remained for a company of river men to demonstrate the existence of oil about a mile and a half in advance of the frontier producing wells, and over the line in Allegheny county. Mr. Henry R. Lamb, who is interested in the Kennedy Oil Company's well, on the Kennedy farm, said the well is located on a line which starts at Marks, No. 1, and passes in a southwesterly direction between Shannon & Co.'s No. 3 and No. 4, on the Widow Thompson farm. It is about four rods over the county line and three-quarters of a mile east of the dry hole drilled by the Chartiers Oil Company, on the Ferguson farm. On a twenty acre lease of the Kennedy farm the river men in the abundance of their faith drilled a test well a mile and a half in advance of developments. At a depth of eight feet in the sand oil was struck, and when the well began to fill up three plugs were driven half way to the sand. After building 850 barrels of tankage and laying a pipe line to the well they started to drill out the plugs on the afternoon of December 4th. On lowering the tools it was found that the plugs were lodged about 800 feet from the top. The well had filled up with oil within 75 feet of the top and a half hours drilling caused it to make a flow of ten barrels. The well failed to meet the expectations of its owners on being drilled deeper after the plugs were out, and parties who visited it December 10th said it was troubled with salt water and would make a small producer. A well is being drilled on the McCutcheon farm, about a half mile in advance of the Kennedy farm well. Near the town of Clinton, which is in the extreme western part of Allegheny county, two test wells are being drilled. One is located on the Cort farm and the other on the Bailey. On the north side of the Ohio river the search for oil in the country between Mount Nebo and the river continues. J. M. Guffey & Co.'s well, on the Smith farm, along a branch of Lowery run, about a mile and a half back from Emsworth Station, made a good showing of oil when the sand was first tapped and led the owners to believe that a large well was among the probabilities. The well, however, failed to materialize when drilled in and only a small producer will result. G. H. Dimick, of 646 fame, had charge of the well while it was being mystified and drilled into the sand.

WASHINGTON.

Since the last review of the Washington field was written for the AGE there have been startling changes and happenings of a surprising character at the eastern end of the field. The free play of the drill has demonstrated that the rush of work and hasty investment in lands by prudent operators was not warranted by the oleaginous resources of the country. After the Mascot, No. 1, on the Lizzie McGahey farm, was completed, John McKeown started four wells along the southern line of the Quail farm, and the Associated Producers began drilling at five on the W. Thome farm, across the narrow road which serves as a boundary line between the two farms. McKeown's No. 1, in the extreme southeastern corner of the Quail property, was dry in the Gantz sand, but found a pay streak in the fifty-foot, a short distance below "the break," *i. e.* the streak or layer of slate found in most wells of the Smith pool, between the Gantz sand and fifty-foot. The oil in this well was struck about 57 feet below the top of the Gantz sand, and in its first and best twenty-four hours the well produced 80 barrels. Its average for the first ten days, having been torpedoed in the meantime, was 40 barrels per day. McKeown's No. 2, one location west of No. 1, was dry in all sands, and was abandoned without being torpedoed. The other two wells on the Quail farm, which were drilled half way to the sand have been shut down and abandoned. The Associated Producers lost confidence in the territory after getting eight rigs and drilling wells under way, and unloaded a lease of fifty acres, with two drilling wells, on the Thome farm, to F. W. Andrews & Conners & Fishel, and a lease of the same dimensions, on the same farm, south of the McGahey, No. 1, to Lee, Shank & Morehead. Contrary to all expectations, Andrews, Connors & Fishel's well, on the Thome farm, one location nearer the belt line than McKeown's No. 1, came in a smaller well. Its production the first twenty-four hours was about 35 barrels, and on the 4th of this month it was producing 20 barrels. F. W. Andrews & The Chartiers Oil Company's No. 1, on the Wright farm, west of the Mascot, No. 1, failed to find any oil in the Gantz sand, where the pioneer well got its first pay streak. The sand at the well which afforded the oil was of a bluish color and inferior in quality. At its best the well produced about 100 barrels in twenty-four hours. It is now demonstrated that the Mascot Oil Companys's No. 1 well, on the Lizzie

McGahey farm, is on the extreme northern or western edge of the belt or pool, which is passing to the east or northeast. F. W. Andrews & The Chartiers Oil Company's No. 2, on the Wright farm, and the Mascot Oil Company's No. 2, on the Lizzie McGahey farm, are failures. The Mascot Oil Company's No. 3, on the Thomas McGahey farm, was dry in the Gantz sand and fifty-foot and is being drilled to the Gordon sand. Their No. 4, on the Thomas McGahey, has a slight show of oil and makes a flow at intervals of a number of days. The No. 5, of the Mascot Oil Company, the well which has changed the situation at the northeastern end of the field, is about fifty rods east of the old No. 1. The sand was struck at this well on Saturday, December 4th, and the pay streak of the Gantz sand was reached after the rock had been perforated from 28 to 30 feet. The well started on its producing career at 15 barrels per hour, and when drilled deeper on the 7th it startled the trade by flowing steadily between 50 and 60 barrels per hour, and furnished a pretext for the disastrous break and panic in the oil market. On the morning of December 9th the well was producing 50 barrels per hour, and on the following morning 39. At this writing, on the morning of the 13th, the well has been drilled 15 feet into the fifty-foot, and its production has not been increased from the sand which has afforded the great wells of the Smith pool. Its yield for this day is placed at 27 barrels per hour by the scouts. Captain Lee & Co.'s well, on the Thome, one location southeast of Mascot, No. 5, struck the pay streak in the Gantz sand on the night of December 8th, about nine o'clock. The well was at its best from the pay streak in the Gantz sand, at noon on Friday, December 10th, and flowed 34 barrels in an hour. On Monday morning it is reported by the scouts to be seven feet in the fifty-foot and its production down to 15 barrels per hour. This well up to date is smaller and more gassy than Mascot, No. 5, and indicates that the streak is narrow at this point if a hard place in the rock has not been found. Lee & Co.'s No. 2, barring accidents, will be the next well in this section to reach the sand. It is southwest of their No. 1, and nearly south of the Mascot, No. 1, on the Lizzie McGahey farm. The well on the Andrews farm, owned by Weaver, Williams & Wilson, has been drilled through the sands and has filled up a little more than 1000 feet with fluid. There was no break in the rock between the Gantz and fifty-foot sands at this well. It is a failure, but may be interpreted as an indicator of productive territory not far to the northward. The well drilled by the Associated Producers, on the Reed farm, near Wyland Station, is about two and a half miles southeast of the Mascot, No. 5. It was dry in all sands, but shows a small amount of gas, which still finds its way to the surface and is kept burning. Reed & Co., of Washington, are sinking a test well on the Pollock farm, about a mile and a quarter to the northeast of the producing wells, on the McGahey and Thome farms. It had reached a depth of 1000 feet on the 10th and should strike the Gantz sand about 2250 feet. Willets & Co.'s well, on the McDonough farm, at Vanceville, about eight miles east of Washington, is now with the heavy gassers and out of the list of dangerous wildcats. The Marshall Oil Company's well, on the Pease estate, three-quarters of a mile southeast of the Fergus farm, is drilling in the sand at this writing, and the owners are working her for a mystery all alone. Munhall & Co.'s No. 3, on the Munce farm, northwest of McKeown's No. 7, is a great gas blower, and of course limits the line of producing territory at this point. A glance at the map indicates that the drilling has been done too far north at the eastern end of the field and the bordering line of the streak or pool is pretty carefully defined in this direction as far to the front as the McGahey, No. 5. At Taylorstown, west of Washington, five rigs and drilling wells are under way. The Manufacturers' Natural Gas Company's well, on the McKeown farm, near the Morganza Reform School property, east of Cannonsburg, is 3130 rods southeast of their old well, on the Connor's property. The well was expected to flow largely, but salt water was struck when the second bit was run, and the well has been transformed into a 50-barrel pumper. This well gets its oil from the fifty-foot, while their well on the Beeabout farm, 3260 rods southwest of it is producing from 6 to 8 barrels per day, inferior oil from the Gordon sand. C. D. Robbins has erected an 800-barrel tank at a well on the Campbell farm, near Bridgeville. The oil is of a dark, green color and is reported to come from the Gordon stray sand.

Below is a list of all wells in the field which were producing November 6th, with their production on that date and the same wells with new ones added to the list with their yield on December 11th:

Farm.	Operator.		Produc. Nov. 6. Barrels.	Produc Dec. 11. Barrels.
Gordon,	P. L. & H. Co.,	No. 1	6	6
"	"	No. 4	25	25
"	"	No. 5	36	40
Hess,	"	No. 2	--	--
"	"	No. 3	18	16
"	"	No. 4	35	--
Gantz,	Citizens' Oil & Gas Co.,	No. 1	26	26
Weaver,	"	No. 3	10	10
Weirich,	Forest Oil Co,	No. 1	15	12
"	"	No. 2	--	10
Barre,	"	No 1	230	159
"	"	No 2	125	90
"	"	No. 3	200	114
"	"	No. 4	552	421
"	"	No. 5	240	400
"	"	No. 6	648	600
Hall,	"	No. 1	3	--
"	"	No. 2	65	58
"	"	No. 3	30	9
"	"	No. 4	10	--
Curry,	"	No. 1	8	35
Taylor,	Union Oil Co.,	No. 1	112	75
"	"	No. 2	50	50
"	"	No. 3	106	55
"	"	No. 4	210	100
"	"	No. 5	--	100
McGovern,	"	No. 1	28	23
Clark,	"	No. 1	18	15
Dye lot,	"	No. 1	410	160
Morgan,	"	No. 1	456	260
"	"	No 2	--	20
"	"	No. 3	67	25
"	"	No. 5	--	100
"	"	No. 6	--	10
Davis,	"	No. 1	337	220
"	"	No. 2	747	400
"	"	No. 3	78	150
"	"	No. 4	--	--
"	"	No. 5	--	--
Linn,	Coast & Co.,	No. 2	210	120
"	"	No. 3	--	30
"	"	No. 4	--	15
Weirich,	"	No. 1	15	15
Hayes,	"	No. 1	10	10
Lead Works Lot,	McKeever & Mulholland,	No. 1	11	10
"	Marsh & Caldwell,	No. 1	11	10
Smith,	Willets, Young, Craig & Co.,	No. 1	18	15
"	"	No 3	76	25
"	"	No. 5	200	25
"	"	No. 6	--	12
Cameron,	"	No. 1	140	97
"	"	No. 2	14	8
"	"	No. 4	168	184
"	"	No. 5	325	238
"	"	No. 6	100	50
"	"	No. 7	--	114
Shirls,	Shirls.	No. 1	42	25
"	"	No. 2	28	--
"	"	No 3	10	10
Stewart,	Fisher Oil Co		489	193
Miller,	Guffey & Co,	No 1	55	58
Hall,	Guffey & Co.,	No. 1	6	7
Manifold,	Pew & Emerson,	No. 1	90	62
"	"	No. 2	59	57
Gabby,	"	No. 1	5	5
Clark,	Thayer & Co.,	No. 1	75	27
"	"	No. 2	185	105
"	"	No. 3	95	--
"	"	No. 4	166	71
Clark,	Thayer & Co.,	No. 5	189	64
Munce,	Willets & Son,	No. 1	90	75
"	"	No. 2	3	4
"	"	No 3	72	45
"	"	No. 4	5	10

Farm.	Operator.		Produc. Nov. 6. Barrels.	Produc. Dec 11. Barrels.
Munce,	Willets & Son,	No. 5	--	--
"	"	No. 7	100	68
"	"	No. 8	185	80
"	"	No. 9	315	215
"	"	No. 10	190	150
"	"	No. 11	--	--
"	"	No 12	688	80
"	"	No. 13	85	60
"	"	No. 14	--	70
"	"	No. 15	--	440
"	"	No. 17	50	85
"	"	No. 19	--	--
"	"	No. 20	--	--
"	"	No. 21	--	150
Montgomery,	J. L. McKinney & Co. & Robbins,	No. 1	18	12
"	"	" No. 3	--	20
Taylor,	Galligan & Co.,	No. 1	100	--
Clark,	Hallam & Co.,	No. 1	--	5
Wiley,	Munhall & Co,	No. 1	10	6
"	"	No. 2	5	--
Vandergrift,	Taylorstown,	No. 1	90	70
Munce,	John McKeown,	No. 1		
"	"	No. 2		
"	"	No. 3		
"	"	No. 4	650	461
"	"	No. 5		
"	"	No. 6		
"	"	No. 7		
Fergus,	Chartiers Oil Co		50	72
Fair Ground,	Wheeling Oil Co.,	No. 1	240	120
Zelt,	Associated Producers,	No. 2	6	10
Wiley,	Associated Producers,	No. 2	30	15
Miller,	Reed & Co		190	40
Weaver,	Hart Bros		25	20
Martin,	Central Oil Co,	No. 1	121	160
Wade,	B. B. Campbell		--	40
Thome,	Andrews & Connors,	No. 1	--	20
"	Lee & Shank,	No. 1	--	528
McGahey,	Mascot Oil Co.,	No. 1	195	140
"	"	No. 5	--	840
Wright,	Craig & Andrews,	No. 1	--	50
"	"	No. 3	--	--
Quail,	John McKeown,	No. 1	--	28

Date.	No. wells.	Production Barrels.
November 6	95	11,070
December 11	117	9,645
Difference	22	1,425

Summary of Daily Pipe Line Runs for November and October, 1886.

The following table shows at a glance the pipe line runs for November and October and the increase or decrease from each section. The estimate for Baldridge is based upon the runs of the National Transit Company, which were 1395 barrels in November, and an approximate estimate of the Pittsburgh Pipe Line, which includes all the oil run from Butler county, under one head:

	Nov.	Oct.	Increase.	Decrease.
Allegany	5,260	5,885	----	625
Bradford	24,690	24,596	94	----
Cherry Grove	232	249	----	17
Balltown	688	667	21	----
Cooper	417	495	----	78
Baldridge, estimated	2,100	2,000	100	----
Kane	4,112	4,505	----	393
Grand Valley	2,089	2,000	89	----
Cogley	1,636	1,840	----	204
Tarkill	1,784	1,831	----	47
Tipperary	205	154	51	----
Red Valley	782	788	4	----
Pontius	2,765	2,928	----	163
Washington	9,129	12,184	----	3,055
Shannopin	3,570	4,401	----	831
Smith's Ferry	4	19	----	15
Macksburg	1,378	1,550	----	172
Other fields	11,304	11,487	----	183
Total	72,145	77,569	359	5,783
	----	73,145	----	359
Decrease	----	5,424	----	5,424

In addition to the above the runs of the Buckeye Pipe Line from the Lima field averaged 4038 barrels a day in November and 4112 in October.

THE total exports of petroleum from America, in gallons, according to a German circular, from January 1 to November 12, have been as follows:

	1886. Gallons.	1885. Gallons.
To Europe	357,546,295	354,157,183
To East Indies, etc	111,007,253	98,708,682
Total	468,553,548	452,865,865

OVER 15,000 wells have been drilled in the Bradford field.

PETROLEUM PRODUCTS.

THE MARKET FOR LUBRICATING AND MISCELLANEOUS OILS AND REFINERS' SUPPLIES, DECEMBER 10, 1886.

[Reported expressly for THE PETROLEUM AGE.]

REVIEW OF THE NEW YORK MARKET.

The month under review has proven satisfactory, so far as the extent of trade is concerned, the outlet for goods in the lines treated of having been all that could have been expected, and showed a considerable increase over the movement during the preceding month. Some of this increase is doubtless due to the anxiety of purchasers to avail themselves of the cheaper freight before the close of river and canal navigation. The demand for goods has been steady and was only checked by the recent severe storm which interfered with the transportation of freight, and the indications are that the present month will prove fully up to the average of previous years. The variations in price have not been numerous, though there were more than for some months previous. What may be most gratifying is the fact that most of the changes are in favor of the producer, the previous exceptionally low prices having given way to more remunerative figures. The improvement extends through the entire list of petroleum products, and to some of the animal and fish oils, and it is believed that further changes in the same direction are pending. Taken altogether the month has proven very satisfactory and manufacturers and dealers are consequently encouraged to believe that the trade of November and December will bring the business of the year up to good proportions and satisfactory profits.

ANIMAL AND FISH OILS.

Cod.—The extremely low prices which have prevailed during the past two months still continue and 28c appears to be the best price obtainable for crude domestic. This is doubtless due to the sales made in the Eastern markets at extremely low rates, the purchasers of these parcels being now satisfied with a moderate profit, though it may be doubtful if the oil could be sold at a higher price. The demand is fair for the season, but is not active. Tanked is quoted at 30@33c and has a steady moderate sale at these figures. Newfoundland is quoted at 37½@40c, as to quantity and quality, but the demand is light. consumers giving the preference to domestic, owing to its relative cheapness.

Elaine.—The supply has been ample, and as the demand has been only moderate, owing to the relative cheapness of competing oils and greases, the price has remained barely steady at 38@40c, with some moderate sales reported at 37½c. There are no large parcels called for, and as the supply has latterly been accumulating no improvement in price is expected.

Lard.—Since our last a marked change has taken place, both in the demand and the condition of the market. Prices on present make have advanced to 51@52c for prime City, and to 50c for prime Western. At these prices the demand has not fallen off and continues fairly active. Extra No. 1 is held firm at 45@46c, owing to scarcity, while No. 1 is to be had at 38@40c, and is consequently receiving more attention, owing to its relative cheapness. No. 2 is slow of sale and quoted at 35@37½c.

Menhaden.—For good merchantable northern crude manufacturers appear quite firm at 21@22c, though on what grounds is not clear, as the stock on hand is fully as large as it was a year ago, and the demand for bleached and pressed does not warrant the expectation

that the stock will be materially reduced during the winter. Before the next issue of the AGE goes to press the United States Menhaden Oil and Guano Association will hold its meeting in this city, at which the statistics will be presented and which will doubtless show more marked changes than did those presented last January. It is believed that the capital invested in this industry will show a falling off to near $1,000,000, while three years ago it amounted to nearly $3,000,000. The number of men employed and vessels engaged will of course show a corresponding decrease. This is due to the low prices that have prevailed for oil, and as there is no good reason to expect an important improvement in this respect this industry may be considered in its decadence. A fair estimate of the present stock of crude is 22,000 barrels, and if this is reduced to 12,000 barrels by the opening of the fishing season next summer, which is not likely, we shall be in exactly the same position we were last spring. The outlook is not encouraging. Bleached and pressed is in moderate request. We quote dark pressed at 24@25c, light pressed at 25@26c, bleached winter at 28@29c, and extra bleached winter at 32c.

Saponified.—The demand has not met the expectations of manufacturers, and consequently there has been an accumulation of supplies which have been urged on the market with little success and with the result of weakening values. The average quotations are 38@40c, but sales have been made at less and offers of fair parcels are made at 37½c.

Sperm.—The sales of crude during the month of November footed up fully 5000 barrels, about 2000 barrels of which was for export. The price has varied but little, 70c being the average price, though some parcels of low grade have sold at a relatively lower price. There is a steadier feeling on the part of the holders and it is not believed that the price will go below 70c, which is asserted to be below the cost. The stock of crude at New Bedford is now about 21,000 barrels, showing a shrinkage of 1000 barrels during the past month. Refined has been in good demand and is now steady at 72@73c for natural spring, 77@78c for bleached spring, 77@78c for natural winter, and 82@83c for bleached winter, though sales have been made at 2c under these figures.

Whale.—Although the arrivals of crude at New Bedford have been quite large, the sales have been sufficient to prevent any accumulation of supplies, and the stock is still under 12,000 barrels. The price has not varied, Arctic being still quoted at 30c, with sales reported at that figure. For South Sea 28c is quoted, though 27c has been accepted for several parcels, and others could doubtless be secured at the same figure. Refined is rather easy under a good seasonable demand. We quote natural winter at 37@38c, bleached winter at 39@40c, extra bleached Southern at 41@42c, and extra bleached Northern at 43@44c.

MINERAL OILS.

Black.—Summer oils are now almost entirely neglected and the demand is principally for the oils showing a low cold test. The few orders received for summer oil are filled at 6c, and as there is considerable yet to be got rid of a good sized order could be placed at 5½c. For 25° cold test 7@7½c is insisted upon, while oil to be within the range of 25° to 30° is generally held at 7c, though 6¾c has been accepted. For 15° cold test 8@8½c is still the uniform price and dealers claim to find no difficulty in realizing these figures, as the demand for this grade is now fairly active. Zero oil is quoted at 10@12c as to holder, and a few moderate sales are reported at the inside figure.

Cylinder.—The demand for the better grades of cylinder stocks has been all that could be expected, and as refiners have an excuse in the higher price of crude, they have been somewhat stiffer in their views, though we cannot record an actual advance in price. For light filtered stock, guaranteed fully 600° fire test, 17@19c is asked, as to brand, and from these figures there is now little variation. Dark filtered, 600° fire test, is quoted at 13@15c. For 550° fire test 15c is usually quoted, but there are offerings at less, and 14c will buy, while some lots may be had as low as 12c—probably all they are worth. Dark steam refined is not in request, but there appears to be considerable offering, and it may be had at the buyer's own valuation, 10@12c being ordinarily quoted, and when this is refused the general query is, "What will you give?" Sales have been made at 8c, and there are holders who would be glad to unload at that figure.

Neutral.—While there has been no positive advance in prices the market may be said to be firmer and in a much more satisfactory position The supply, while ample, is not excessive, and the best grades are not being pushed at anything they will realize. The offerings of off quality are smaller—a good indication—and on these the prices are irregular, holders accepting whatever they can realize. For 32° gravity 18c is now the uniform price, and although sales have been made at less it is not always possible to place an order under that figure. For 34° gravity 16@17c is required, and generally obtained, while for 37° gravity 14@15c is quoted. Oils showing slight bloom are to be had at 2@3c under the above quotations, but are not very salable.

Paraffine.—The outlet for the best grades has been good, while those off in quality have been difficult to dispose of, the very low price of these oils leaving no inducement to purchase low grades on the score of economy. The supply is still very large and in excess of requirements, and to this fact must the failure to secure better prices be attributed. For 25° gravity 8½@9c is obtained, and while some large parcels have been sold at 8c moderate orders for best known makes have been rejected at that figure. For 28° gravity 7c appears to be the uniform quotation, but as the supply is very large there have been sellers at 6½c, and considerable parcels have been placed at that figure. There is very little demand for 30° gravity, and as the supply is also light holders quote 7c. Red oils of best quality are obtainable at 10@12c, as to maker, but there are low grades on the market to be had at the buyer's own figures. The demand is principally for the best oils.

The following quotations are the wholesale market prices on mineral oils:

Black reduced, 29 gravity, 25@30° cold test ℔ gal	7 — 7¼
Black reduced, 29 gravity, 15° cold test	8 — 8½
Black reduced, summer	5 — 6
Black reduced, zero	10 — 12½
Cylinder, light filtered, 600° fire test	17 — 18
Cylinder, dark filtered, 600° fire test	13 — 15
Cylinder, cold test filtered	20 — 25
Cylinder, dark steam refined	8 — 12
Franklin, natural 32 gravity	18 — 20
Neutral filtered, 32 gravity	17½— 18
Neutral filtered, 34 gravity, bloomless	16 — 17
Neutral filtered, 37 gravity, bloomless	14 — 14½
Neutral filtered, 32 gravity, wool stock	11 — 12
Paraffine, 24 gravity	13 — 14
Paraffine, 25 gravity	8½— 9
Paraffine, 28 gravity	7 — —
Paraffine, 30 gravity	7 — —
Red, 23-24 gravity	10 — 12
Smith's Ferry, 33 gravity	7½— 8
Smith's Ferry, 34 gravity	7 — 7¼
West Virginia, natural, 29 gravity	18 — 20

PETROLEUM PRODUCTS.

Paraffine Wax.—While the sales of crude have been

quite large, both for home use and export, it is nevertheless apparent that the production continues in excess of the consumption, and consequently prices remain very low, and somewhat unsettled, being largely influenced by the accumulation in the hands of the holder, and his desire to unload. For 126°@128° m. p. 4¾c is the uniform price, but sales for export have been made at 4½c, and also several for home use. For strictly 128° m. p. 5c is asked and generally obtained. The price of 130° m. p. is irregular and there being a comparatively light supply holders are able to obtain a fair price, sales being reported at 6c. Refined has moved satisfactorily and some large sales have been made at what are regarded satisfactory prices under present conditions of supply and demand. The stock of lower melting point is largely in excess of the demand and for 132° m. p. 8c has been accepted, with further parcels offering at this figure. For 134°@136° m. p. 9c is the general asking price, while for strictly 136° m. p. 10c is insisted upon, though considerable has changed hands at 9½c. The supply of soft wax has been increased and the offerings are now ample, while prices are easier, ranging from 8c for ordinary to 12c for choice parcels for special uses.

Petrolatum.—The outlet is reported as being satisfactory and showing that the popularity of this product of petroleum is fully sustained. As the number of manufacturers of this product is small the competition is not sharp and fair prices are generally obtained, but the field will doubtless be entered by others when the competition will reduce the profits as it has on the lubricants. We quote 14@15c for white, 10@12c for light yellow, 9@10c for yellow, 8@9c for dark and 8@10c for veterinary. We have during the past month examined samples from several makers and find a considerable variation in quality, and considerable difference between samples from the same maker obtained at different times. Uniformity of quality should be aimed at if the makers desire to obtain fair prices and secure a reputation for their goods.

REFINERS' SUPPLIES.

Acids.—Business in nitric and sulphuric acids has not been brisk, and the call for mixed acid shows a falling off as the purposes to which the latter are applied are affected by the weather, mining and similar operations, as well as torpedoing oil wells receiving a check in cold weather. Prices have varied very little since our last, sulphuric remaining unchanged, the average price of 66° being $1.05 per 100 pounds in large lots, and contracts have been made at that figure. Nitric is held firmer and our inside figures are now only accepted for large orders. Mixed acid for nitro-glycerine manufacture shows no change, makers accepting orders at our figures for early delivery. In reply to a query we state that mixed acid is usually sold in iron drums, holding about 1400 pounds, and which are returned to manufacturer when empty. These are the well-known drums in which glycerine is imported.

Nitric, 36°	₱ cwt.	$5 40—5 60
Nitric, 38°		5 60—6 00
Nitric, 40°		6 00—6 25
Nitric, 42°		6 75—7 00
Sulphuric, 60°		95—1 05
Sulphuric, 65°		1 05—1 10
Mixed equal parts, 49° n, and 66¼° s	₱ lb.	3¼—3⅜
Mixed, 7 parts 49° n, 4 parts 66¼° s		4⅛—4¼
Mixed, equal parts, 49° n, and 66° s		3 —3¼
Mixed, equal parts, 48° n, and 66° s		2⅞—3

Alkalies.—The demand for caustic soda has been fair for the season, but prices are a trifle weaker. At our outside figures spot lots are readily obtainable and desirable customers have been able to do a shade better, while our inside quotations are accepted for shipments. Contracts for next spring and summer have been made at even lower figures, and as there appears to be some change in the policy of the manufacturers, which may result in sharper competition for the American trade, still lower prices next year will not prove surprising. The higher test sodas have been in most request and these are the ones showing a weaker tendency. The present quotations are as follows, the outside figures for spot lots from store and the inside for shipments to arrive after the close of the year:

Caustic Soda, 60 ₱ cent	₱ cwt.	$2 80 —2 90
Caustic Soda, 70 ₱ cent		2 55 —2 60
Caustic Soda, 74 ₱ cent		2 50 —2 55
Caustic Soda, 76 ₱ cent		2 60 —2 75

Glues.—The position of the market for all grades of glues has improved during the past month, and the better grades of domestic have advanced about 2c, and the lower grades 1c per pound. The weather is now unfavorable for manufacturers, and the stocks not being very large it is believed that higher prices will prevail as the supply on hand diminishes. The demand is fair for the season. Imported are firmer in sympathy with domestic.

Extra white	₱ lb.	20 — 22
Medium white		15 — 19
Medium brown		12 — 14
Low grades		7 — 10
English		14 — 19
French		14 — 23
German		10 — 13
Irish		14 — 17

Paints.—The demand for paints generally has been rather disappointing, but refiners have been fair purchasers. The difficulties among the white lead corroders have been adjusted and combination prices are now strictly adhered to. On all other classes of goods there is no change to note, the quotations being steady as follows:

Chrome yellow	₱ lb.	10 — 15
Prussian Blue pure		28 — 40
Prussian Blue, low grade		6½— 10
Ultramarine Blue, imported		20 — 25
Ultramarine Blue, domestic		10 — 15
Lead in oil		7 — 7¼
Blue, ready for use		3 — 7
Green, "		3 — 8
Red, "		4 — 10
White, "		3 — 7
Yellow, "		3 — 7

The inside prices on these is for dry and the outside for ready mixed.

SUMMARY of the Statement of the Tidewater Pipe Company, Limited, for November, 1886:

		Barrels.
Quantity of crude petroleum in custody at beginning of November		1,357,603.24
Quantity of crude petroleum at close of Nov.	1,511,973.20	
Less sediment and surplus	143,775.15	
		1,368,198 05
Receipts during November		190,360.20
Received in iron tanks		51,317.35
Deliveries during Nov.—to refiners	227,523.91	
" " " to other parties	--------	227,523.91
Outstanding certificates, accepted orders, etc.		664,000 00
Credit balances		704,198 05
Total liabilities, November 30, 1886		1,368,198.05

OCTOBER SUMMARY.

		Barrels.
Quantity of crude petroleum in custody at beginning of October		1,364,004.28
Quantity of crude petroleum at close of Oct.	1,501,675.45	
Less sediment and surplus	144,072.21	
		1,357,603.24
Receipts during October		191,669.16
Received in iron tanks		17,765.60
Deliveries during October—to refiners	214,722.54	
" " " to other parties	--------	214,722.54
Outstanding certificates, accepted orders, etc.		694,000.00
Credit balances		663,663.24
Total liabilities October 31, 1886		1,357,603.24

THE village of Carey, O., has voted by a poll of 269 to 32, to issue bonds for the payment of the necessary expense in boring gas wells for the supply of the town.

SEVERAL wells are now furnishing gas at the following places in Kansas: Paola, LaCygne and Ft. Scott. Wells are being bored at Iola, Pleasanton, Mound City, Mound Valley and Chanute.

WHITE SAND POOLS.

CHERRY GROVE, COOPER AND BALLTOWN PIPE LINE RUNS TO NOVEMBER 30, 1886.

1882.	Ch'y Gr've. Bbls.	Cooper. Bbls.	Balltown. Bbls.	Total. Bbls.	Daily Av'ge. Bbls.
May	6,765	-----	------	6,765	218
June	91,102	------	------	91,102	3,035
July	268,294	------	------	268,294	8,655
August	753,752	------	------	753,752	24,317
September	690,072	------	------	690,072	23,002
October	290,246	3,712	------	293,958	9,483
November	146 587	8,810	------	155,397	5,180
December	98,582	17,342	2,700	118,624	3,827
Total	2,345,400	29,864	2,700	2,377,964	9,706
1883.					
January	102,705	50,590	10,349	163,644	5,279
February	82,718	41,291	9,312	133,321	4,761
March	83,876	53,845	11,418	149,139	4,811
April	78,130	114,064	25,214	217,408	7,247
May	68,406	118,682	29,501	216,589	6,987
June	66,453	125,988	58,839	251,280	8,376
July	58,619	107,465	60,278	226,362	7,302
August	59,979	98,151	95,405	253,535	8,178
September	48,553	96,024	111,700	256,077	8,536
October	40,677	102,748	133,248	276,673	8,925
November	32,711	97,516	114 233	244,490	8,150
December	32,885	89,164	116,747	238,796	7,703
Total	755,512	1,095,558	776,244	2,627,314	7,198
1884.					
January	23,787	90,145	87,061	200,993	6,484
February	28,062	108,543	81,649	218,254	7,526
March	31,020	143,571	87,193	261,784	8,445
April	31,191	126,860	71,989	230,040	7,668
May	30,010	107.514	70,069	207,593	6,696
June	25,348	89,554	67,508	182,410	6,080
July	16,206	76,762	76,601	169,569	5,470
August	20,615	63,415	67,883	151,913	4,900
September	19,590	64,648	63,453	147,691	4.923
October	13,824	56,151	55,211	125.186	4,038
November	12 689	39,065	42,025	93,779	3,126
December	12,600	38,621	36,864	88,085	2,841
Total	264,942	1,004,849	807,506	2,077,297	5,676
1885.					
January	11,158	37,635	25,123	73,916	2,384
February	9,151	27,642	25,469	62,262	2,224
March	11,558	26,866	29,589	68,013	2,194
April	8,982	33,420	23,246	65,648	2,188
May	10,639	32,599	27,978	71,216	2,297
June	13,181	29,998	31,340	74 519	2.484
July	14,478	28,095	31,990	74,563	2,405
August	11,247	28,603	28,828	68,678	2,216
September	9,367	27,531	28,315	65,213	2,174
October	13,269	24,104	28,677	66,050	2,131
November	9,078	21,224	30,909	61,211	2,040
December	13,701	23,207	36,634	73,542	2,372
Total	135,809	340,924	348,098	824,831	2,260
1886.					
January	9,478	19,320	32,953	61,751	1,992
February	8,552	15,987	29,579	54,118	1,933
March	10,942	20,227	32,839	64,008	2,065
April	10,403	17,499	24,979	52,881	1,763
May	10,477	18,322	42,660	71 459	2,305
June	10,324	18,154	33,126	61,604	2,053
July	10,731	18,050	35,976	64,757	2,089
August	9,305	17,289	24,788	51,382	1,657
September	7,671	14,465	27,384	49,520	1,651
October	7,723	15,348	20,677	43,748	1,411
November	6,949	12,513	20,630	40,092	1,336
Tot'l Nov. 30, '86	3,604,218	2,658,369	2 260,139	8,522,726	5,088

The above table gives the statistical history of the Cherry Grove, Cooper and Balltown fields from the time oil was first run in each district to November 30, 1886. Cherry Grove has produced 3,604,218 barrels, Cooper 2,658,369, and Balltown 2,260,139 barrels. The daily average runs from the three fields during November were 1336 barrels, a decrease of 75 barrels from the October figures.

The daily average runs from the Cooper and Henry's Mills section for November were 417 barrels, October 495 barrels, September 482 barrels, August 558 barrels, July 582 barrels, June 605 barrels, May 591 barrels, for April 583 barrels, for March 653 barrels, for February 571 barrels, and for January 623 barrels.

The Balltown field had a daily average of 688 barrels in November, 667 barrels in October, 913 barrels in September, 800 barrels in August, 1161 barrels in July, and 1104 barrels in June. Cherry Grove averaged 232 barrels in November, 249 barrels in October, 256 barrels in September, 300 barrels in August, 346 barrels in July, and 344 barrels in June.

The total pipe line runs from the three fields since oil was first run from Cherry Grove, in May, 1882, up to November 30, 1886, inclusive, has been 8,522,726 barrels, a total daily average of 5088 barrels. The greatest average runs from the Cherry Grove district were in August, 1882, when they reached 24,315 barrels.

BALDRIDGE AND COGLEY RUN.

The runs from Baldridge since April 1, 1884, and from the Cogley district since May 15, 1885, have been as follows:

MONTH.	Baldridge Runs.	Daily Average	Cogley. Runs.	Daily Average.
April	25,325	844		
May	32,885	1,061		
June	29,070	969		
July	27,545	889		
August	26,134	843		
Septemb er	79,324	2,644		
October	187,068	6,034		
November	284,806	9,493		
December	270,644	8,730		
January, 1885	192,180	6,199		
February	205,774	7,349		
March	224,398	7,239		
April	280,005	9,333		
May	232,138	7,488	3,927	127
June	105,774	5,905	18,266	609
July	119,531	3,856	37,848	1,220
August	79,318	2,268	65,570	2,115
September	60,637	2,021	97,325	3,244
October	58,834	1,898	158,110	4,939
November	44,081	1,469	162,476	5,416
December	44,011	1,420	162,479	5,241
January, 1886	39,933	1,288	138,549	4,469
February	34,094	1,218	111,144	3,970
March	42,430	1,369	119,270	3,847
April	38,983	1,299	108,541	3,618
May	37,752	1,218	100,994	3,258
June	40,167	1,339	88,082	2,936
July	40,631	1 311	77,584	2,503
August	42,097	1,358	67,405	2,174
September	41,652	1,388	60,140	2,004
October	41,835	1,349	57,031	1,840
November	41,843	1,395	49,098	1,636

For the nineteen months ending with November 30 the Cogley oil field has produced 1,678,839 barrels of oil, a daily average of 2977 barrels. The daily average for 534 days ending October 31, was 3052 barrels.

The Thorn Creek and Baldridge runs averaged 1395 barrels a day in November, 1349 barrels a day in October, 1388 barrels a day in September, 1358 barrels a day in August, 1311 barrels a day in July, and 1339 barrels a day in June. This is exclusive of the oil run by the Pittsburgh Pipe Lines, which receive from 500 to 800 barrels a day from Butler county.

The Rockland or Red Valley district, in Venango county, commenced running oil in October, 1885, and up to the 1st of November had produced 380,940 barrels; a daily average for 266 days of 894 barrels.

The Tarkill pool in Venango county averaged 427 barrels a day in March, 764 barrels a day in April, 915 barrels a day in May, 1262 barrels a day in June, 4038 barrels a day in July, 3756 barrels a day in August, 2258 barrels a day in September, 1009 barrels a day in October, and 920 barrels a day in November. The Excelsior Pipe Line commenced running oil from this field in September, and its runs are not included in the preceding figures. The Pontius or McKeever pool, in Butler county, produced 82,962 barrels in November, 90,777 barrels in October, 84,126 barrels in September, 85,331 barrels in August, 70,458 barrels in July and 70,489 barrels in June.

The runs from the Tipperary district in Venango county were 4800 barrels in October and 6156 barrels in November.

THE Manufacturers' Natural Gas Company turned its Cannonsburg gas well into its mains and began to supply the mills on Second avenue, Pittsburgh, and a number of private residences November 22.

FIELD OPERATIONS SUMMARIZED.

WELLS COMPLETED, WITH THE ESTIMATED PRODUCTION ON THE LAST DAY OF THE MONTH.

ALLEGANY FIELD.

Division of Field.	November, 1886. Wells.	Prod'n.	Dry.	October, 1886. Wells.	Prod'n.	Dry.
Scio	0	0	0	2	5	1
Alma	0	0	0	4	15	0
Wirt	5	8	4	5	12	3
Bolivar	0	0	0	2	12	0
Clarksville	4	33	1	6	54	0
Genesee	0	0	0	1	0	1
Miscellaneous	0	0	0	0	0	0
Total	9	41	5	20	98	5

BRADFORD FIELD.

Division of Field.	November, 1886. Wells.	Prod'n.	Dry.	October, 1886. Wells.	Prod'n.	Dry.
E. and W. Branches	7	50	0	8	35	1
Kendall Creek	0	0	0	1	6	0
Foster Brook	2	12	0	2	11	0
Knapp's Creek	0	0	0	0	0	0
Four Mile	0	0	0	0	0	0
Indian & Meeks Creeks	5	28	0	5	29	0
Cole Creek	3	26	1	0	0	0
Kinzua	1	10	0	2	18	0
Miscellaneous	2	0	2	1	0	1
Total	20	126	3	19	99	2

WARREN AND FOREST.

District.	November, 1886. Wells.	Prod'n.	Dry.	October, 1886. Wells.	Prod'n.	Dry.
Glade	8	172	1	5	31	0
Clarendon	8	38	1	9	47	0
Tiona	2	14	0	8	36	1
Cooper	1	5	0	1	0	1
Balltown	0	0	0	2	25	0
Kane	12	200	0	30	565	1
Grand Valley	17	124	2	34	300	1
Miscellaneous	9	5	8	14	6	12
Total	57	558	12	103	1010	16

LOWER COUNTRY.

District.	November, 1886. Wells.	Prod'n.	Dry.	October, 1886. Wells.	Prod'n.	Dry.
Venango	39	286	8	48	425	12
Clarion	14	43	5	19	96	9
Butler and Armstrong	33	1373	5	31	786	6
Washington	25	1215	6	19	2485	5
Shoustown, Etc	19	1719	1	20	1575	7
Total	130	4636	25	137	5367	39

GRAND SUMMARY.

District.	November, 1886. Wells.	Prod'n.	Dry.	October, 1886. Wells.	Prod'n.	Dry.
Allegany	9	41	5	20	98	5
Bradford	20	126	3	19	99	2
Warren and Forest	57	558	12	103	1010	16
Lower Field	130	4636	25	137	5367	39
Total November	216	5361	45	279	6574	62
Total October	279	6574	62			
Decrease	63	1213	17			

Rigs Up and Building—Wells Drilling.

ALLEGANY FIELD.

Division of Field.	Nov. 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	Oct. 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Scio	0	4	0	4	0	4	0	4
Alma	1	5	1	7	0	5	0	5
Wirt	1	10	4	15	4	9	4	17
Bolivar	0	4	1	5	0	4	1	5
Genesee	0	8	0	8	0	8	0	8
Clarksville	1	6	3	10	1	6	4	11
Miscellaneous	0	0	4	4	1	0	1	2
Total	3	37	13	53	6	36	10	52

BRADFORD FIELD.

Division of Field.	Nov. 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	Oct. 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
E. and W. Branches	2	10	6	18	5	10	4	19
Kendall Creek	0	0	0	0	0	0	0	0
Knapp's Creek	4	7	3	14	2	7	2	11
Foster Brook	0	4	2	6	0	5	2	7
Four Mile	0	3	0	3	0	3	0	3
Indian Creek	3	5	6	14	5	5	6	16
Cole Creek	0	4	1	5	0	4	3	7
Kinzua	0	0	1	1	0	0	1	1
Miscellaneous	0	0	3	3	1	0	3	4
Total	9	33	22	64	13	34	21	68

WARREN AND FOREST.

Division of Field.	Nov. 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	Oct. 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Glade	2	0	7	9	3	0	10	13
Clarendon	5	2	9	16	4	4	7	15
Tiona	5	7	4	16	3	6	3	12
Cooper	0	2	0	2	0	2	1	3
Balltown	1	3	3	7	3	2	1	6
Kane	1	3	9	13	4	2	15	21
Grand Valley	5	3	12	20	6	5	11	22
Miscellaneous	1	6	15	22	9	3	11	23
Total	20	26	59	105	32	24	59	115

LOWER COUNTRY.

Division of Field.	Nov. 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	Oct. 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Venango	25	8	33	66	21	7	40	68
Clarion	4	9	9	22	3	9	14	26
Butler & Armstrong	21	4	52	77	31	4	48	83
Washington	12	28	57	97	15	10	87	112
Shoustown, Etc	10	7	40	57	21	8	40	69
Total	72	56	191	319	91	38	229	358

GRAND SUMMARY.

Field.	Nov. 30, 1886. New Rigs.	Old Rigs.	Drilling.	Total.	Oct. 31, 1886. New Rigs.	Old Rigs.	Drilling.	Total.
Allegany	3	37	13	53	6	36	10	52
Bradford	9	33	22	64	13	34	21	68
Warren and Forest	20	26	59	105	32	24	59	115
Lower Country	72	56	191	319	91	38	229	358
Total	104	152	285	541	142	132	319	593
Total Oct. 31	142	132	319	593				
Difference	38	20	34	52				

SUMMARY of the Statements of the National Transit Company for November and October:

	November. Barrels.	October. Barrels.
Receipts from all sources	1,767,138.06	1,885,503.77
Deliveries	2,221,105.88	2,089,153.67
Gross stocks end of month	34,057,479.62	34,684,202.19
Sediment and surplus	3,060,205.42	3,228,434.71
Total liabilities end of month	30,997,274.20	31,455,767.48
Outstanding acceptances	23,964,801.48	24,836,576.08
Credit balances	7,032,472.72	6,619,191.40

The above "receipts from all sources" for November were made up as follows:

Runs from wells	1,497,382.64
Received from other lines	213,188.38
Received in iron tanks	56,567.04
Total	1,767,138.06

The above "total deliveries" for November were made up as follows:

Regular shipments	2,169,788.53
Delivered to other lines	51,317.35
Total	2,221,105.88

The above "receipts from all sources" for October were made up as follows:

Runs from wells	1,596,431.00
Received from other lines	289,072.77
Total	1,885,503.77

The above "total deliveries" for October were made up as follows:

Regular shipments	2,071,388.17
Delivered to other lines	17,765.50
Total	2,089,153.67

THE pipe line runs from the Washington field averaged 13,143 barrels a day in September, 12,184 barrels in October and 9129 barrels in November.

Crude Market for November.

For the first ten days of the month the market was a repetition of the lifelessness and inactivity that characterized it throughout the preceding six months. But a favorable pipe line report, with the apparent failure of the McGahey end of the field in Washington county, and the general decline of the great gushers of other parts of that district, combined to bring about a stronger feeling, and the market closed on the night of the eleventh at 68 cents. The following day there was a still farther strengthening of values, and on the last day of the month the price reached was 80 cents at Oil City and Pittsburgh. This is the most gratifying advance that has been scored since the market started upon the down grade, from the strikes at Kane and Washington, early in the year.

The month of November opened with crude at 66¼c to 66½c, which were the highest figures recorded the first nine or ten days. It sold down to 65⅜c on the 6th, which was the lowest point of the month. On the 12th it advanced to 74½c and kept well above the 70 cent point for the rest of the month. The highest quotation was 80 cents, which was reached on the 30th, and the month closed with prices firm at 78¼c to 78⅝c. The lowest quotation for October was 62⅜c and the highest 67⅛c.

The range of prices for November was 14⅝c as compared with 4¾c in October, 4¾c in September, 6½c in August, 3⅞c in July, 8¾c in June and 12⅝c in May. The average price on the floor of the Bradford Exchange was 72c in November, 65⅛c in October, 63⅜c in September, 62c in August, 66c in July, 67c in June, 69⅞c in May, 74c in April, 77⅛c in March, and 80c in February. The average price for November one year ago was $1.04⅜.

THE CLEARANCES.

	November. Barrels.	October. Barrels.
Bradford Oil Exchange	33,632, 00	24,445,000
Oil City "	95 950,000	62,273, 00
New York Consolidated Exchange	211,502,000	98,278,000
Pittsburgh Petroleum Exchange	96,053,000	53,823,000
Philadelphia Oil Exchange	21,863,000	11,657,000
Total	459,000,000	250,478,000

November Production Report.

Reports of the stocks on hand at 6132 Bradford wells showed an average decrease of .4 barrels to the well during November:

Time.	No. Wells.	Gross Stocks.	Average per well.
November 1, 1886	6 132	299,461	48 8
December 1, 1886	6,1.0	296,868	48.4
Difference	2	1,593	.4

The number of wells in the Bradford field connected with the pipe lines on the first of December is estimated at 14.000. Estimating the entire Bradford region on the basis of .4 barrels decrease, the total decrease in stocks at wells during November was 5600 barrels, a daily average of 187 barrels. Subtracting the decrease in stocks from the total runs as reported by the National Transit and Tidewater pipe lines, Bradford's daily average production for November is as follows:

	Barrels.
Average Daily Pipe Line Runs	24,690
Average Daily Increase of Stocks at Wells	187
Bradford's November Production, estimated	24,503
" October " "	25,454
Average Daily Decrease	951

THE ALLEGANY FIELD.

Stocks from 908 wells in the Allegany field show an average increase of 4.4 barrels to the well, during November. With 4100 wells in the field on the first of December, the total increase in stocks amounts to 18,000 barrels, a daily average increase of 600 barrels for the month of November. Adding this increase to the pipe line runs, 5260 barrels, the sum 5860 represents Allegany's daily yield for November. The estimated production for October was 6017 barrels a day.

WARREN, FOREST AND LOWER COUNTRY.

Reports were received from groups of wells in the different sections of Warren, Forest and the Lower Country. The number of wells on the 1st of each month, with their averages, are contained in the following statement:

Field.	No. Wells Nov 1.	No. Wells Dec. 1.	Average per well Nov. 1.	Average per well Dec. 1.
Clarendon and Tiona	236	236	20	25
Cherry Grove	22	22	41	44
Cooper District	125	113	33	36
Lower Country	122	124	79	77
Miscellaneous	163	171	149	134

Accepting the outside runs, which are made up of the producing fields outside of Bradford and Allegany, as representing the production outside of those two fields, an estimate on the yield for November and October is as follows:

Field.	November. Barrels.	October. Barrels.
Bradford	24,503	25,454
Allegany	5,860	6,017
Outside Runs	40,817	45,538
Total	71,180	77,009

In the above estimates no account is taken of the "dump oil" loaded on the cars direct from the wells at Emlenton and other points in the region. The runs from Washington are included with the outside field. The Macksburg field, which is not included in the above estimates, averaged 1515 barrels a day in November and 1619 barrels a day in October. The Lima runs were 4038 barrels a day in November and 4112 barrels a day in October.

The following table shows the comparative production for 1883, 1884, 1885 and 1886:

	Bradford.		Allegany.		Outside Runs.		Total Prod.	
	1884.	1883.	1884.	1883.	1884.	1883.	1884.	1883.
January	31,806	36,847	11,263	14,106	16,140	14,172	59,209	65,125
February	32,378	38,481	11,607	13,154	18 561	13,573	62,546	65,208
March	31,912	37,754	11,768	12,619	19,764	14,031	63,444	64,404
April	32,442	38,810	11,848	13,742	19,162	16,655	63,452	69,207
May	33,922	39.039	11,547	13,793	19,549	16,613	65.018	69,445
June	33,753	35,279	11,108	13,499	19,977	18 330	64,838	67,108
July	34.031	34,537	11,218	12,345	20,870	16,758	66.119	63.640
August	33,353	35,087	10,384	12,264	22,830	18,969	66,567	66,320
September	32.976	34,965	9,877	12,335	22,514	17,958	65,367	65,258
October	31,758	35,654	9,356	13,088	22,762	19,288	63.876	67,981
November	31,789	35,026	8.642	12,678	23,557	18,433	63.988	66,137
December	29,516	35,760	8,193	12,437	22,918	18,428	60.627	66,625
	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.
January	28,675	31,806	8,260	11,264	18,594	16,140	55,529	59,240
February	27,051	32 378	7,196	11,607	19,800	18,561	54.047	62,546
March	26,444	31,912	7,342	11,768	19,923	19,764	53,709	63,444
April	27,413	32,442	7,169	11,848	23,067	19,162	57,649	63,452
May	27,231	33.922	7,049	11,547	21,225	19,549	55.505	65 018
June	29,272	33,753	7,463	11,108	21,559	19,977	58,294	64,838
July	30,309	34,031	7,139	11,218	19,273	20,870	56,721	66,119
August	29,858	33,353	7,065	10 384	18,608	22,830	55,531	65,567
September	30,205	32,976	7,186	9,877	21,269	22,514	58,660	65,367
October	30.180	31,758	6,747	9,356	23,161	22,762	60,088	63,876
November	31,355	31,789	7,002	8,642	23,087	23,557	61,444	63 988
December	29,223	29,516	6,196	8,193	24,184	22,918	59,603	60,297
	1886.	1885.	1886.	1885.	1886.	1885.	1886.	1885.
January	28,677	28,675	6,378	8,260	22,217	18,594	57,272	55,529
February	28,585	27,051	6 651	7,196	22,603	19.800	57,840	54,047
March	27.947	26,444	6,137	7 342	25,680	19 923	59.764	53,709
April	27,807	27,413	6,527	7,169	28,693	23,067	63,027	57,649
May	27,148	27,231	6,535	7,049	34,515	21,225	68,198	55,505
June	27,860	29,272	6,554	7,463	40,040	21,559	74,454	58,294
July	27.046	30,309	6,350	7,139	40,491	19,273	73,887	56,721
August	26,695	29,858	6.200	7,065	43,762	22,830	76,657	55,531
September	26,674	30,205	5.994	7,186	45,560	21,269	78,228	58,660
October	25,454	30,180	6,017	6,747	45,538	23,161	77,009	60,088
November	24,503	31,355	5,860	7,002	40,817	23,087	71,180	61,444

CRUDE petroleum is one of the best wood preservatives known. Being thin it penetrates the wood deeply and fills up all the pores and interstices. The petroleum can be applied with a brush or large cloth. Wood when treated with petroleum will take the paint better, and cause it to adhere longer.

NOVEMBER OPERATIONS.

THE ENTIRE REGION—WELLS COMPLETED, WELLS DRILLING, AND RIGS UP AND BUILDING.

WELLS COMPLETED IN NOVEMBER, 1886.

Allegany Field.

Twp. Owner Barrels.
W rt, 47, (J Jordan) McQueen & Co No 1.dry
" 52, (Jordan heirs) Empire Gas Co No 2.... gas
" 60, (Lawrence) Empire Gas Co.... gas
" 61, (Dayoe) Natl Transit Co No 81. gas
" 62, Chas Phillips.... 5
Clarksville, 5, (Lane) Lane Oil Co No 6. 10
" 5, (Lane) Barton, Ackerly & Co No 21 ... 15
" 3, (A Jordan) Angell Oil Co No 3....dry
" 10, (Swartwout) Angell Oil Co No 3.... 8

Wells completed.... 9
Production.... 41
Dry.... 5

Bradford Field.

East and West Branches.

Warrant 2263, Van Vleck & Mitchell No 39.... 10
" 2263, R J Straight No 20.... 10
Dent, P C L & P Co No 72.... 8
" " No 73.... 8
Cranmer, Columbia Oil Co No 8.... 5
Brown, Wood & Young No 9.... 5
Cutting, C C Kerr.... 6

Foster Brook.

C B & H, Watson Oil Co No 48.... 6
" W W Brown.... 6

Indian Creek.

Gale, G N Moo e No 7.... 6
Shattuck, Bussell & Johnson No 9.... 6
" R G Taylor No 16.... 6
Dodge, T Jennings No 2.... 5
" McGilvray Bros.... 5

Cole Creek.

Bingham, lot 517, Rose & McLeod No 2..dry
" lot 585, Associated Producers No 62.... 20
" lot 540, John McKeown No 3.. 6

Kinzua.

Warrant 2243, Emery Oil Co No 51.... 10

Miscellaneous.

St Marys, St Marys Oil & Gas Co....dry
Richardson, Cheney & Co....dry

Wells completed.... 20
Production.... 126
Dry.... 3

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

Morrison, Anchor Oil Co No 12.... 4
White, Morse & Col ins No 3.... 6
" " No 4.... 50
Willie Run, Smith, Bright & Co No 3.... 100
Sugar Run, (Richardson) Sugar Run Oil Co No 6.... 4

Warren, etc.

Hemlock, P M Smith & Co No 5.... 4
" (Island) Law & McKelvey No 5.... 4
Kerberger, Brown Bros No 2....dry

Wells completed.... 8
Production.... 172
Dry.... 1

Clarendon.

35, A J Thompson.... 5
35, Henderson & Murphy.... 5
55, O W Beatty & Bro No 52.... 6
531, S Short & Son No 12.... 6
531, " No 13.... 5
556, J A Waterhouse & Co No 18.... 6
556, " No 19.... 5
558, Goal Bros.... gas

Wells completed.... 8
Production.... 38
Dry.... 1

Tiona.

165, McKelvey & Best No 16.... 8
201, Mandell Oil Co.... 6

Wells completed.... 2
Production.... 14
Dry.... 0

Cooper District.

3198, Haight, Agnew & Co No 6.... 5

Wells completed.... 1
Production.... 5
Dry.... 0

Kane.

344, Treat & Mallory No 2.... 20
34 , Clinton & Swayne No 2.... 15
38 , Boyer, Caldwell & Co No 13.... 20
380, Boston Oil Co No 4.... 15
380, " No 6.... 15
381, " No 16 e-t.... 15
382, Rathbone & Mallory No 7.... 15
382, " No 8.... 10
382, " No 9.... 10
3767, Craig & Cappeau No 39.... 30
3767, Assd Producers & Craig & Cappeau No 13.... 20
3767, Roy & Archer No 7 est.... 15

Wells completed.... 12
Production.... 200
Dry.... 0

Grand Valley.

Merritt, Miller & Crippens No 17.... 10
Zane, (187) Fertig & Co No 12.... 8
" " No 13.... 10
186, W B Benedict & Co No 11.... 8
186, " No 12.... 10
196, Bovec & Duck No 11.... 10
196, " No 12.... 8
Carpenter, W J Jackson & Co No 7.... 10
Putnam, Wayne Oil Co No 6.... 10
146, Wha ey & Zane No 3....dry
51, Mitchell & Dibble.... 4
150, Fertig & Lord No 5.... 8
150 and 185, John J Ca ter No 20.... 10
345, (Van Gilder) M M Boiles....dry
Henderson, C ty Oil Co No 3.... 5
197, Hazeltine & Bell No 9.... 5
197, " No 10.... 8

Wells completed.... 17
Production....124
Dry.... 2

Miscellaneous.

Cherry Grove, 683, McGrew Bros....dry
3779, Sill & Odell....gas
Wilcox, Al Nickel & Co....gas
Pidoute, W W Hague....dry
2033, Clark. Fo ter & Co est.... 5
2695, National Transit Co No 20....gas
267 , " No 3....dry
2723, " No 24....gas
2684, " No 30....gas

Wells completed.... 9
Production.... 5
Dry.... 8

Lower Country.

Venango and Other Sections.

Farm. Operator. Barrels.
Benninghoff, Oil City Fuel Supply Co No 6.... gas
Swarms, Oil City Fuel Supply Co.... gas
Kaufman, Judd & Geiser.... 5
Mt Hope, Dr Galbr ith.... 10
Baltimore lands, (Oleopolis) Sargent.... 2
Curtis, Thomas Smith No 3.... 4
Baum, W L Gage....dry
M rston, G osser & Co.... 2
Columbia, Columbia Oil Co No 169.... 10
Kernan, Kirkwood & Bar roft.... 10
Kirkwood, Kirkwood & Co.... 15
Niagara, Henry Wilbur.... 10
Holiday Run, B F Bru e r d.... 6
East Sandy, Ow ton & Manson....dry
Miller, Smith & Galbraith.... 5

Tipperary.

Moore, Beers & Co No 6....dry
J Fox, E & B F McCracken No 6.... 10
J Fox, Wesley Chambers No 3.... 10
A Moore, A P Dale No 2.... 6
" I S Gibson & Co No 2.... 12
M Fox, Judd & aufman No 2.... 6
Reese, Sam Reese & Co No 1.... 3
Siggins, Taylor, Torrey & Murphy No 4. 10
J Stanley, Milton & Co.... 3
Saddler, Duncan & Co....dry
Strow, McKeever & Co....dry

Tarkill.

Webb, Taylor, Torrey & Murphy No 17.... 20
Benton, Benton Oil Co No 14.... 15
Houser, I H Webb & Co No 7.... 25
" " No 8.... 25
Houser, A P Dale & Co No 5.... 2
Benninger, Columbia Gas Co No 3.... 10

Rockland or Red Valley.

Dale, Dale Bros No 2.... gas
Hetzler, Leckey & Foster.... 10
Hetzler, Morgan & Fox.... 10
Batten, Batten & Co.... 8

Vicinity Emlenton.

Jew tract, Johnson & Fink.... 8
Sandy Point, F J Perrine.... 6

Bullion.

A J Surena, Hoffman & Co.... 8

Wells completed.... 39
Production.... 286
Dry.... 8

Clarion.

Shippen, John J Carter No 5.... 10
Edmunds, Urquhart & Lavens No 8.... 7
Smith, Oak Shade Oil Co.... 3
Kiser, P F Kr bs.... 3
Mahle, Atwater & Co.... 4
" D O White & Co.... 8
Kiser, Kiser & Co.... 3
Cherry Run, Beson & Co (for gas)....dry
McDowell, McKinney Bros No 1.... 3
McCleary, McCleary Bros....dry
Maple, Smith, Yonkers & Corlett.... 2
Mahoning Creek, McElraby....dry
Neely, Fox Estate....dry
Amos Pollard, Prospect Oil Co....dry

Wells completed.... 14
Production.... 43
Dry.... 5

Butler and Armstrong.

Miller, Dennison & Fleegler No 9.... 30
Murtland, Troutman Oil Co No 6.... 25
Jenny Boyle, Showalter Bros & Hartman No 4.... 15
" " No 5.... 35
" " No 6.... 25
" " No 7.... 5
Wm Hickey, Fisher Oil Co No 2.... 20
" " No 3.... 30
" " No 5.... 50
Chas Duffey, McBride & Campbell.... 5
Hough on, Phil Brady & Co.... 8
Glenn, C White No 3....dry
John Dickey, Phillips Bros....dry
Dickey heirs, Fish r Oil Co.... 5
M rshall, (Mars Station) Clark & Hoag dry
Wills, Recp & Sutton No 1.... 40
" " No 2.... 40
Hickey, Brady & Simpson No 1 est.... 40
Burford, Dale, Larkin & Co No 6.... 50
Spithaller, Phillips Bros No 1.... 250
" " No 2.... 150
" " No 3.... 250
J C Critchlow, Leidecker No 1 est.... 25
Heil, Leidecker No 1 est.... 100
P Boyle, Woodford & Co....dry

St. Joe.

Bippus, Phillips Bros....dry

Martinsburg.

Arch Kelley, Butler & Co.... 15

Thorn Creek.

Maharg, J S McKelvey & Co No 4.... 30
Burton, Farmers' Oil Co No 2.... 10
Burton, McBride & Campbell No 2.... 35
" Thayer & Crosby No 2.... 20
" " No 3.... 40
Kersting, McClung & Co.... 25

Wells completed.... 33
Production....1373
Dry.... 5

Shannopin, Etc.

A P Morrow, Raccoon Oil Co & Solar Oil Co No 3.... 15
" " No 5.... 200
" " No 9.... 15
" " No 13.... 14
McCartney, Raccoon Oil Co No 5.... 200
" " No 6.... 100
Marks, " No 3.... 500
Jas Allexander, " No 2.... 60
" " No 3.... 50
Wallace, " No 2.... 15
" " No 3 est.... 25
" " No 4 est.... 25
Thompson, P M Shannon & Co No 2.... 50
" " No 6.... 200
" " No 9.... 100
Economy, Economites....dry
Kennedy, McDonald & Co.... 25
Gilmore, Galey Bros No 2.... 25
A P Morrow, Raccoon Oil Co No 3.... 100

Wells completed.... 19
Production....1719
Dry.... 1

Washington.

Taylor, The Union Oil Co No 5 125
Morgan, " No 2 35
" " No 5 125
Wm Davis, " No 3 200
Wade, B B Campbell No 2 75
Lizzie Magahey, Mascot Oil Co No 2 ....dry
Thos Magahey, " No 3 ....dry
Quail, John McKeown No 1 30
" " No 2 .....dry
Munce heirs, Willets & Son No 13 100
" " No 14 est 50
" " No 15 20
" " No 17 100
" " No 20 50
" " No 21 100
Fergus, Chartiers Oil Co No 1 75
Wright, Chartiers Oil Co & F W Andrews No 1 50
" " No 2 ....dry
W Thome, F W Andrews & Connors & Fishel No 1 35
Wylie, Munhall & Co No 3 ..... gas
Van Kirk, Caldwell & Co No 1 .....dry
Montgomery, McKinney Bros & Co No 3. 20
Cannonshurg, (McCowan) Manufacturers' Gas Co est 10
Cannonsburg, (Beabout) Manufacturers' Gas Co est 10
Noblestown, (Campbell farm) C D Robbins 5

Wells completed 25
Production 1215
Dry 6

DRILLING WELLS.

RIGS UP AND BUILDING NOVEMBER 30, 1886.

Allegany Field.

Scio.

Lot.	Owner.	Depth.
3,	Coyle & Simon (old)	rig
12,	Allen & Morse (old)	rig
12,	Griffin & Co No 10 (old)	rig
50,	Pease & Coyle No 9 (old)	rig

New rigs 0
Old rigs 4
Drilling 0
Total 4

Alma.

3, M J McMullan & Co No 5 (old) - rig
23, Vance & Hor on (old) ..... rig
26, Wi letts & Elliott (old) ..... rig
51, Sawyer & Co (old) ..... rig
81, Shirley & Hochstetter No 8 ..... drilling
81, " No 9 ..... rig
120, McCalmont Oil Co No 10 (old) ... rig

New rigs 1
Old rigs 5
Drilling 1
Total 7

Wirt.

47, (Voorhees) Applebee & Mix No 2 (old) .... rig
48, (Church) McNorton, Deming & Co No 2 (old) .... rig
52, (Jacob Jordan) Wilson & Johnston No 9 (old) .... rig
55, (Orson Witter) P M Shannon & Co No 1 (old) .... rig
60, (Alvah Jordan) J H Snow No 3 (old) .... rig
60, (M Jordan) Surprise Oil Co No 2 drilling
60, (Alvah Jordan) Cottrell & Co No 4 .... drilling
61, (Deyoe) National Transit (for gas) .... rig
61, (J Jordan) Ackerly, Barton & Co (old) ... rig
61, (Isaiah Jordan) Lester, Jordan & Co No 6 (old) .... rig
61, " " No 7 (old) .... rig
62, (Peterson) Limekiln Club No 4 (old) .... rig
62, (Latham) " No 1 (old) .... rig
62, (Peterson) Barton, Hammond & O'Neil No 6 .. drilling
62, Chas Phillips ..... drilling

New rigs 1
Old rigs and shut down 10
Drilling 4
Total 15

Bolivar.

12, Wood & Co (old) ..... rig
15, Kelly & McMurray No 8 ..... sand
23, F C Streeter & Co No 12 (old) ... rig
30, Fritz & Lowry No 8 (old) ..... rig
30, " No 10 (old) ..... rig

New rigs 0
Old rigs 4
Drilling 1
Total 5

Genesee.

14, Merwin (old) ..... rig
22, I Willetts No 14 (old) ..... rig
22, " No 15 (old) ..... rig
22, " No 16 (old) ..... rig
22, " No 17 (old) ..... rig
22, " No 18 (old) ..... rig
23, Coughlin (old) ..... rig
29, William Cranston (old) ..... rig

New rigs 0
Old rigs 8
Drilling 0
Total 8

Clarksville.

3, (M Jordan) M Jordan No 3 ..... rig
5, (Lane) Lane Oil Co No 5 (old) .. rig
5, (Bradford) Barton, Ackerly & Co No 20 .... sand
6, (Seever) Ackerly, Barton & Co No 9 (old) .... rig
6, (Hamilton) Ackerly, Barton & Co No 23 .... drilling
20, (Ernhout) " (old) .... 2 rigs
20, (Barton) Clarksville Oil Co ..... drilling
9, Heuston & Brecht No 4 (old) .... rig
9, Merritt (old) ..... rig

New rigs 1
Old rigs 6
Drilling 3
Total 10

Miscellaneous.

Birdsall twp, I Willets & Co ..... drilling
Mrs Grador, (Allegany) Conroy & Johnston .... drilling
Woodmancee (Allegany) Furness & Stevens No 2 .... drilling
Redhouse Creek, lot 28, D Fritz & Co (shut down) .... sand

New rigs 0
Old rigs 0
Drilling 4
Total 4

Bradford Field.

East and West Branches.

Warrant 2263, Van Vleck & Mitchell No 40 50
" 2263, R J Straight No 21 ... 100
Dent, P C L & P Co No 74 50
" " No 75 ..... rig
B O Co, Western Oil Co No 7 (fishing) sand
Mack, Columbia Oil Co (old) ..... rig
" Fisher Oil Co No 19 (old) ..... rig
King, Carmen & Co No 2 ..... drilling
Hodgman, Barber & Reynolds ..... rig
Arnot Wood & Young No 10 ..... drilling
Wagner, W C Patterson & Co No 10 drilling
" " No 11 (old) rig
Paton, McClure & Co (old) ..... rig
Hinchey, McMurray Bros No 6 (old) rig
Clark, McCray Bros (old) ..... rig

Quintuple.

25, O H Strong (old) ..... rig
44, J W Humphrey (old) ..... rig
260, E T Howes (old) ..... rig

New rigs 2
Old rigs and shut down 10
Drilling 6
Total 18

Knapp's Creek.

Matthews, C B Whitehead No 6 (old) rig
Borden, T P Thompson ..... drilling
" " (old) ..... 2 rigs
" J S Rogers ..... rig
Duke, J West No 7 (old) ..... rig
" " No 8 (old) ..... rig
Keating, Forest Oil Co No 54 (old) .. rig
Erskine, Doe & Smith ..... rig
Ellis, Dr Chrisman (old) ..... rig
Taylor, Eldred Gas Co No 5 300
Rixford, Joseph Daily ..... drilling
Eldred, Elder Bennett ..... rig
Bradley, Duke Centre Gas Co (for gas) .... rig

New rigs 4
Old rigs 7
Drilling 3
Total 14

Foster Brook.

E T Co, Kervin & Co No 10 (old) .... rig
" E T Co No 42 600
C B & H, Juter & Yager (old) ..... rig
" Clark, Cooper & Co No 9 (old) .... rig
" Burns & Monroe (old) .... rig
Lafferty, Van Vleck & Gifford No 56 200

New rigs 0
Old rigs 4
Drilling 2
Total 6

Four Mile.

Van Campen, Coldren & Vance (old) rig
" Jas K Van Campen No 3 (old) .... rig
Dye, Manhattan Oil Co No 5 (old) ... rig

New rigs 0
Old rigs 3
Drilling 0
Total 3

Indian Creek.

North Branch, J D Downing & Co (old) 2 rigs
Hamlin, Miller & O'Dell No 4 (old) .. rig
" Forest Oil Co No 40 (old) ... rig
" " No 41 (old) ... rig
Weston, Murphy, Hogan & Williams No 13 ... drilling
" " No 14 ... rig
" McKinney & Co No 7 ..... rig bldg
Shattuck, Bussell & Johnson No 10. drilling
" " No 11. drilling
Shattuck, R G Taylor No 17 ..... drilling
" " No 18 ..... rig
Gale, G N Moore No 8 ..... drilling
Dodge, T Jennings No 3 ..... drilling

New rigs 3
Old rigs 5
Drilling 6
Total 14

Cole Creek.

Warrant 2263, Union Oil Co No 6 (old) rig
" 2263, " No 7 (old) rig
Bingham, lot 369, Bennett & Thompson No 11 (old) .... rig
" lot 477, Tucker & Rolfe No 3 (old) .... rig
" lot 582, Ass'ed Producers No 63 600

New rigs 0
Old rigs 4
Drilling 1
Total 5

Kinzua.

Bonanza, Newell & Quigley ..... drilling

New rigs 0
Old rigs 0
Drilling 1
Total 1

Miscellaneous.

2470, McKean Co, Andrews & Co .... drilling
Near Gaines, Pa, Home Co ..... drilling
Van Wermer, (Ceres) Ceres Gas Co (for gas) .... drilling

New rigs 0
Old rigs 0
Drilling 3
Total 3

Warren and Forest.

GLADE AND OTHER TOWNS.

Kinzua Village.

White, Morse & Collins No 5 ..... drilling
Weed, " No 5 ..... drilling
Willie Run, Smith, Bright & Co No 4 drilling
Richardson, T G Phillips ..... rig
Swift Island, Fogel & Co ..... drilling
Morrisons, (Sherard) Dr Van Scoy .. sand
Hodge Run, (Rollins) Book & Co ... drilling

Warren, Etc.

Clark, James Clark ..... rig
North Warren, Sandford & Jamieson No 7 .... sand

New rigs 2
Old rigs 0
Drilling 7
Total 9

Clarendon.

35, Gray & Nutting No 5 ..... drilling
35, Henderson & Murphy No 8 ..... drilling
55, O W Beatty & Bro No 53 ..... drilling
55, " No 54 ..... rig
77, Waterhouse & Co No 8 300
105, R I Shugert 150
105, Tucker & Co No 3 ..... rig
105, Hackett & Shirley No 6 (fishing) sand
107, W B Roberts & Son No 20 (old) . rig
463, Ed O'Donnell ..... drilling
463, Fred Hue No 2 (old) ..... rig
531, S Short & S n No 14 300
531, " No 15 ..... rig bldg
556, J A Waterhouse & Co No 20 .... sand
556, " No 21 .... rig
556, " No 22 .... rig

New rigs 5
Old rigs 2
Drilling 9
Total 16

Tiona.

75, Fertig, McKinney & Co ..... rig
75, " ..... rig bldg
161, Ed O'Donnell (old) ..... rig
165, McKelvey & Best No 18 ..... drilling
200, Bovee & Duck No 10 (old) ..... rig
201, Mandell Oil Co ..... rig
201, Wesley Chambers 800
201, " ..... rig
240, W W Winger No 5 (old) ..... rig
244, Horton, Crary & Co No 13 (old) . rig
244, " No 20 (old) . rig
244, " No 21 (old) . rig
244, " No 22 (old) . rig
281, (Ford) L Kraeer & Co No 11 300
284, Watson & Mitchell No 8 ..... drilling
324, W W Winger No 2 ..... rig

New rigs 5
Old rigs 7
Drilling 4
Total 16

Cooper District.

407, Shank & Stewart No 9 (old) .... rig
407 " No 13 (old) .... rig

New rigs 0
Old rigs 2
Drilling 0
Total 2

Balltown.

3194 Porcupine Oil Co No 39 (old) .. rig
3195, (Crisman) N F Clark No 14 (old) rig
Newton, Wheeler & Dusenbury (old) rig
Fork Run, Kelley, Grandin & Co ... drilling
5214, Buffalo Oil Co ..... sand
5214, James Welsh ..... drilling
5214, " ..... rig

New rigs 1
Old rigs 3
Drilling 3
Total 7

Kane.

341, Forlorn Hope Oil Co No 2 300
344, Treat & Mallory No 3 ..... sand
344, " No 4 (prd'ing) 1600
344, " No 5 1500
344, " No 6 300
344, " No 7 200
344, " No 7 ..... rig
381, Boston Oil Co No 18 ..... sand
381, " No 19 (fishing) .. 1700
420, Coast & Sons No 24 (old) ..... rig
343, Rathbone & Mallory No 10 300
3767, Craig & Cappeau No 40 (old) ... rig
3767, Ass Producers & Craig & Cappeau No 14 ... 700

New rigs 1
Old rigs and shut down 3
Drilling 9
Total 13

Grand Valley.

Merritt, Miller & Crippens No 10 .... drilling
Blakeslee, " No 8 ..... drilling
" " No 9 (old) rig
Peterson, " No 8 (old) rig
Emerson, Kepler & Wood No 6 ..... sand
Zane, (187) Fertig & Wood No 14 .... drilling
Putnam, Wayne Oil Co No 7 ..... drilling
" " No 8 ..... drilling
" " No 9 ..... rig
Lot 149, (D Pet Co) G P Kepler No 16 drilling
" 150, Nelson Farrell No 8 300
" 151, Cadwallader & Co No 2 ..... sand
" 150, Fertig & Lord No 6 ..... rig
" 238, J B Jennings & Grandin (old) .... rig
" 199, Barker & Co ..... sand
" 236, (Proper) Boiles & Roberts . drilling
Lot 151, (Lackey) Southwest Oil Co No 7 .... drilling
Phil lands, Mead & Beatty ..... rig
Lot 135, Emery & Ralston ..... rig
" 137, G P Kepler & Co ..... rig

New rigs 5
Old rigs 3
Drilling 12
Total 20

Miscellaneous.

3671, J H Markham & Co (old) ..... rig
3664, Clark & Foster 800
2026, S B Hughes & Co (old) ..... rig
193, Pennsylvania Gas Co (old) .... rig
2565, C G Thyng 1000
5797, Coast & Sons 800
2033, Porter, Thyng & Co ..... rig
3663, Boyer, Simpson & Co No 2 350
2032, Boggs, Armstrong & Co No 2 .. 100
4022, Coast & Sons (old) ..... rig
5698, Wallace & Co 500
5504, Shannon Syndicate ..... drilling
5192, Berry & Co ..... sand
Hickory, Taylor, Torrey & Co ..... drilling
" Barnum & Leasure ..... drilling
Sutton Hill, A F Fritts (old) ..... rig
Youngsville, (McKinney) Scranton Oil Co (shut down) sand
" (R A Siggins) Scranton Oil Co .... drilling
3215, Wilcox Tannery Co (for gas) .. drilling
2684, National Transit Co No 27 ..... drilling
2686, " No 28 ..... drilling
2698, " No 29 ..... drilling

New rigs 1
Old rigs 6
Drilling 15
Total 22

Lower Country.

Venango and Other Sections.

Sage Run, Beers & Son No 3 (old) .. rig
Myers, Oil City Fuel Supply Co .... drilling
60 acres, " No 2 sand
" " No 3 rig
McBride, Thomas Smith (old) ..... rig
Kaufman, A P Dale No 9 (old) ..... rig
Osmer, Galbraith & Parker (old) .... rig
Mt Hope, Dr Galbraith ..... rig bldg
East Sandy, (Kiester) Owston & Manson .... rig
Wallaceville, Phillips Bros ..... sand
Milton, Chas Schaffer ..... drilling
Oleopolis, (Stevenson) Lynch Bros . rig
Slab Furnace, S P McCalmont (old) rig
Titusville, lot 87, (Tubbs) Porter & Gillmor .... sand
Steele, John Waits ..... sand
Blood, P Bankson ..... drilling
John McClintock, John Harsh ..... drilling
Buchanan, J B Robinson No 5 ..... drilling
McClintock, J H McCandless ..... rig
Shaw, W J Robinson ..... rig
Columbia, Columbia Oil Co No 170 .. rig bldg
Blood, Wratten & Co (old) ..... rig
Pleasantville, W P Black ..... drilling
" " ..... rig

Tipperary.

Moore, Beers & Co No 3 (fishing) 700
J Fox, " No 2 ..... drilling
Isabell Stanley, Beers & Co ..... rig
J Fox, E & B F McCracken No 7 ... drilling
" " No 8 ... rig
A Moore, A P Dale No 3 ..... rig
M Fox, Judd & Kaufman No 3 ..... drilling
" Niece & Co ..... sand
Siggins, Taylor, Torrey & Murphy No 5 .... sand
" " No 6 700
" " No 7 .... rig
Moore, Speechley & Co ..... sand
H Heckathorn, J Goettel ..... drilling
Henue, J Goettel ..... drilling
" Phinuey & Co ..... rig
" Wesley Chambers ..... rig
Heckathorn, Phinney & Co ..... drilling
Saddler, Riddle & Lynch (fishing) .. 600
" Wolf & Kugler ..... rig
T S Hazlitt, Deitrich & Warfield .... sand
" " ..... rig bldg
J Stanley, Milton & Co No 2 ..... rig bldg

Tarkill.

Houser, I H Webb & Co No 9 ..... sand
" " No 10 ..... rig
Houser, A P Dale & Co No 6 ..... sand
Benninger, Columbia Gas Co No 4 .. sand
" " No 5 .. drilling
" Benninger & Myers No 3 rig
Wm Huff, J J Fisher ..... drilling
Thompson, Loots & Reedey ..... drilling

Rockland or Red Valley.

Hetzler, Leckey & Foster ..... rig
Jolly, Morgan & Fox ..... rig
John P Bishop, Burton & Co ..... rig bldg

Nickleville.

Watson, Watson Bros ..... rig
Wicks, W H H Piper ..... rig
" Goodrich & Salishury ..... sand

Vicinity Emlenton.

D Russell, Baum & Co (old) ..... rig
W P Grant, J V Ritts (old) ..... rig
Dr Crawford, Wm Weaver No 7 .... rig bldg

Bullion.

Baker, Baird & Co 200
Hovis, Hovis & Co 250
Anderson, Kingsley & Co 200

New rigs 25
Old rigs 8
Drilling 33
Total 66

Clarion.

Berlin, Berlin & Sons No 14 (old) ... rig
" " No 15 (old) ... rig
John Henel, Koch Oil Co No 8 (old) rig
Lloyd, Dr Metzger (old) ..... rig
Shreffler, McCallom & Co (old) ..... rig
Wagner & Curl, J V Ritts (old) .... rig
Heasley, Heasley & Co (old) ..... rig
Brown, J V Ritts (old) ..... rig
Wagner & Curl, Wagner & Hahn (old) .... rig
Jones, (Corsica) John Deitrich & Young (fishing) .... sand
Gloss, Phillip Gloss ..... sand
Fisher, J B Smithman 50
Buzz, F J Harley & Co No 1 50
S Schwab, Schwab & Co ..... drilling
Berlin, Berlin & Sons ..... drilling
McDowell, McKinney Bros No 2 ... rig
Smith, (Paint Creek) Smith & Wagner .... rig bldg
Hosterman, John Irwin No 4 600
Wittigen, Clover Bros No 1 800
Jacob Black, Berlin & Sons No 2 .... rig
Edmunds Urquhart & Lavens No 9 .... rig bldg
Egypt tract, Eager & Co No 2 200

New rigs 4
Old rigs 9
Wells drilling 9
Total 22

Butler and Armstrong.

McGarvey, Hunter & Cummings 1300
Miller, Dennison & Fleegler No 10 . 1000
F Miller, W G Crawford & Co (old) .. rig
Hickey, Boyd & Co No 4 300
" " No 5 ..... rig
Murtland, Troutman Oil Co No 7 ... 800
Brownfield, Richard Jennings (old) . rig bldg
Jenny Boyle, Showalter Bros & Hartman No 8 .... rig
Geo Rogers, W S Guffey & Queen No 1 .... rig bldg
Wm Hickey, Fisher Oil Co No 4 1300
" " No 6 600
" " No 7 .... rig
Thomas Rogers, J Hartman 1300
Fataman, Campbell & Co ..... sand
Hildebrand, E A Rider ..... sand
Hickey, Brady & Simpson No 2 ..... sand
" " No 3 300
O Neil, Holland, Black & Co 900
J Fredrick, Campbell & Co 1000
Chas Duffey, Hoch & Co (old) ..... rig
" Branch Creek Oil Co .. 200
John Coyle, McBride & Campbell .. rig
Gillespie, Turner & Sutton ..... rig
Chas Duffey, M Finnegan No 2 700
" " No 3 100
" " No 4 ..... rig
Arcbey Black, Campbell & Murphy No 1 300
Pine Run, Jordan Bros 500
Roherbaugh, Scott & Co 1000
Burford, Sample & Son 600
Fennel, Greenley & Co ..... rig
Brady's Bend tract, Wilson & Smith drilling
" Hart Bros 1200
Mars, (Belford) R W Miller 500
" (Douthett) D A Wray & Co .. rig bldg
Gillespie, Big Venture Oil Co 600
Slater, Phillips Bros No 3 1200
Callery, (Widow Croft) Breakneck Oil Co 800
Butler, Sam Boyd (for gas) 1200
Chas Duffey, McBride & Campbell .. sand
Wills, Reep & Sutton No 3 100
" " No 4 ..... rig
" Bott & Story 1000
Coyle, Bott & Story 1200
Butler, (Mrs Edwards) Shenango Gas Co (for gas) 1300
" (Mrs Edwards) Shenango Gas Co (for gas) .... rig
Dininger, Butler Gas Co (for gas) .. 1400
Ralph, Shenango Gas Co (for gas) .. 1700
Mnnee, " " .. rig bldg
Near Butler, National Transit Co (for gas) 800

McClure, Butler Water Co (for gas) 600
Duffey, McCafferty & Co 600
McCrea, Mc nire Bros 1100
McJunkin, Quiller & Co rig
Burr, P Smick, No 3 300
Broell, Barchfield & Denniston drilling
Heid, Phillips Bros 1300
Hel , Bedecker No 2 rig
S H Critchlow, Phillips Bros No 3 900
McCalm nt, Phillips Bros No 13 300
Markle, Phillips Bros 900
Schaffne , Phillips Bros rig bldg
Critchlow, Wilson, Gahagan & Gibson 300
Mount Chestnut, Pittsburgh pa ties drilling
Duff, Connors & Fishel (fishing) 1400
J W Slater, McLaughlin rig bldg
Malony, Dan Burns rig bldg
Gagens, Taylor & McMartin 300
Hiram Rankin, Thos M Marshall 500
Harbison, Connors & Fishel rig

St. Joe.

Nordheim, Christie & Co drilling
Bipp us, Pullips No 2 300
J Ball, P C L & P Co 60
Augert, " rig
Hasler, Christie & Co rig

Martinsburg, Etc.

J S Cooper, Cooper dri'ling
R H Campbell, Campbell & Co rig
Harrison, W H Harrison (old) rig

Thorn Creek.

Bulford, Iman, McBride & Campbell (fishing) 1450
Maharg, Bolard & Smith No 3 1200
" " No 4 rig
Burton, McBride & Campbell No 3 rig bldg
" Thaer & Crosby No 4 800
Kerst ng, McClung & Co No 4 200
Hayes, Clark & Co 1000

New rigs 21
Old rigs 4
Drilling 52
Total 77

Washington.

Gordon, P L & H Co No 6 750
I Wilson, Forest oil Co (old) rig
Johnson, " (old) rig
Barre, " No 7 1000
" " No 8 1350
" " No 9 1400
" " No 10 900
" " No 11 1500
" " No 12 500
Morgan, Union Oil Co No 4 drilling
" " No 6 sand
" " No 7 (shut down) 60
" " No 8 rig
Wm Davis, " N 4 2100
" " No 5 2200
" " No 6 (shut down) 100
" " No 7 600
Taylor, Union Oil Co No 6 1500
" " No 7 500
College Park, Kirkadden & Co (old) rig
Andrews, Wilson, Brenneman & Weaver sand
Parseill, Fisher Oil Co (plugged) 1150
Wade, B B Campbell & Co No 1 300
Thos McGahey, Mascot Oil Co No 4 sand
" " " No 5 2150
W J Munce, John McKeown No 8 (shut down) 1522
" " No 9 (shut down) 1570
" " No 10 2000
W J Munce, John McKeown No 11 500
" " No 12 550
Martin, John McKeown No 1 fishing 2405
" " No 2 2000
" " No 3 rig bldg
Quail, " No 3 (shut down) 1800
" " No 4 (shut down) 1700
Linn, Coast, Sons & Co No 1 (shut down) 1500
" " No 4 2250
Clark, Thayer Oil Co No 6 1400
Smith, Willets, Young & Chartiers Oil Co No 2 (shut down) 2130
" " No 4 fishg 2370
" " No 6 fishg 2175
" " No 7 1700
Cameron, " No 3 600
" " No 7 sand
" " No 8 drilling
" " No 9 rig bldg
Baker's Station, Dyer & Roberts fisg 1500
Munce Heirs, Willets & Son No 6 rig
" " No 11 (fishing) sand
" " No 16 160
" " No 18 1500
" " No 19 2400
" " No 22 1500
" " No 23 (old) rig
" " No 24 (old) rig
" " No 25 (old) rig
" " No 26 (old) rig
" " No 27 1500
" " No 28 (old) rig
McDonough, Willets & Co 2150
Coal Center, Hombake (shut down) drilling
Fair Grounds, Wheeling Oil Co No 2 1900
" " No 3 1300
Martin, Central Oil Co No 2 1500
" " No 3 rig bldg
Martin, Allen, Dyer & Co (shut dwn) drilling
Linn, Manufacturers Natural Gas Co 1200
Taylor, Gallagan & Young No 2 1200
Wright, Chartiers Oil Co & F W Andrews No 3 2250
Pease, Marshall Oil Co 2250
Wm Thome, F W Andrews & Connors & Fishel No 2 (shut down) 1450
Wm Thome, Associated Producers No 1 (shut down)
" " No 2 (shut down)
" " No 3 (shut down)
Pollock, Ass'd Producers Co No 1 600
Martin, " rig
W Thome, Lee & Shank No 1 2150
" " No 2 1300
John Murdock, Millers Oil Co (old) rig
John on lot, Colton & Co (shut down) 650
Boyce Station, Philadelphia Co drillin
McCracken, Reed & Co (old) rig
eyda, F J Ciemenger & Co (old) rig
McKean, Caldwell & Co 1400
Whittie, " rig
Mannold, Pew & Emerson No 3 1000
Hoffman, Barnes (old) rig
Watson, Brille & Co 1000
Wallace, Marshall & Co drilling
O C C Pollock, C M Reed & Co drilling
Wile , C M Reed & Co drilling
Bridgeville, C D Robbins drilling

Taylorstown.

Carson, West Virginia Nat Gas Co 200
Noble " rig bldg
Blaney, " rig bldg
Cundell, Vandergrift & Reed rig bldg
Sheller, Aiken & Co rig bldg
McMannis, Guffey rig bldg

New rigs 12
Old rigs 28
Drilling 57
Total 97

Shoustown, Etc.

Thos Pinkerton, J S McKelvy (old) rig
Charles Eachel, Raccoon Oil Co No 4 (old) rig
" " No 5 300
" Chas Eachel 400
Hood, Raccoon Oil Co (old) rig
" " 400
A P Morrow, Raccoon Oil Co & Solar Oil Co No 1 (fishg) 1550
" " No 14 1200
" " No 15 1300
" " No 16 rig
" " No 17 rig
" " No 18 rig
McCartney, Raccoon Oil Co No 7 1200
" " No 8 1000
Stevenson, Raccoon Oil Co No 2 1400
" " No 3 500
" " No 4 rig
Jas Alexander Raccoon Oil Co No 4 1300
Wallace, " No 5 rig
McAllister, " No 2 700
Purdy, P M Shannon No 1 500
" " No 2 rig
Thompson, P M Shannon No 8 fishg 1700
Alexander, Lovell & Ramsey 100
McCoy, Frederick & Calhoun rig
Stone, McFarland No 3 drilling
McCoy, Zeigler & Co rig bldg
Baden, Barton & Co rig
Economy, Economites drilling
Smith, J M Guffy & Co (shut down) sand
Thos Pinkerton Union Oil Co rig
Allegheny Co, Asa Say & Liggett 1200
Davis & Duff Union Oil Co 1000
Good, Duffy & Co (fishing) 600
Riddle Philadelphia Co 1400
McGee, Vandergrift & Co 1000
Robt McCoy, Raccoon Oil Co No 2 drilling
Agnew, Jutte & Co 1400
Harper, McGee & Cusick 1200
Fargeson, Chartiers Oil Co No 1 drilling
Coo farm, (Allegheny Co) Cosgrove & Co drilling
John Morrow, Raccoon Oil Co No 4 drilling
Neville Island, Dimick & Co drilling
John Aiken, Philadelphia Co (fishg) 1850

Greene County and The Southwest.

Fordyce E M Hukill & Co No 1 (shut down) 1360
Gregg, E M Hukill & Co No 1 (fishing) 2275
Girard, E M Hukill & Co No 1 (shut down) 750
Girard, E M Hukill & Co No 2 (shut down) 1060
Hathaway, E M Hukill & Co No 1 1060
Mt. Morris, E M Hukill & Co No 1 sand
Longanecker, " (old) rig
Phillips farm, Willets & Co drilling
Ninevah, Johnston & Hamilton 1100
Marshall Co. (W Va) Cameron, Wheeling Natural Gas Co drilling
Marshall Co, (W Va) Rocklick twp, Wheeling Natural Gas Co drilling
Greene Co, Rich Hill twp, Wheeling Natl Gas Co drilling
" Alleppo twp, " drilling

New rigs 10
Old rigs and shut down 7
Drilling 40
Total 57

West Virginia.

Moundsville, Craig & Cappeau No 2 drilling
" " No 3 rig bldg
Wetzel Co, Clay twp, Robbins & Co rig
Marion Co, Logansport, " rig
Wirt Co, Say & Leggett 700

The Average Price of Crude.

The following table gives the average price of crude certificates, on the floor of the Bradford Oil Exchange, since March 1, 1879:

MONTH.	1879	1880	1881	1882	1883	1884	1885	1886
January	-----	110 1-5	95	83	92¾	111⅓	70¾	88¼
February	-----	103¼	89¼	85¼	101	104⅜	73⅛	80
March	86	89	82⅞	80⅞	97½	100⅛	80⅜	77⅛
April	78¾	76⅝	84⅛	78¼	92⅝	94	78⅞	74
May	73½	80¼	81½	70	99⅜	85½	79⅞	69⅞
June	68¾	100¼	81	54½	117¼	68¾	8 ¼	67
July	69⅞	101¼	76⅛	57⅜	108	63½	96⅜	66
August	6 ¼	0¾	78⅔	58⅔	108⅜	81 1-5	100⅜	62
September	69¼	9 ½	92¼	71⅓	112½	78	100¾	63⅜
October	88	96¾	92¾	93⅜	111½	71	105½	65⅛
November	105⅜	91¼	82⅛	114	114 4-5	72½	104⅜	72
December	113¼	92⅜	83¾	9 ½	114⅓	74⅜	89⅝	-----

THE Shannopin runs averaged 4401 barrels a day in October and 3904 barrels in November.

A SINGULAR accident occurred near Hickory, in Washington county, on the night of December 4. Alfred Crocker, an employe of the Chartiers Gas Company, had been at the company's gas tanks, on the McKnight farm, and was going toward the well, when the connecting pipe between the well and tank burst with terrible force, striking Crocker on the left leg above the ankle, blowing the foot and ankle completely off, and also injuring him about the body. The explosion was so violent that it hurled the large iron gas tank a hundred feet out of its position. The young man died at 3 o'clock on the following morning.

NATURAL gas from McKean and Elk counties was lighted in Buffalo December 1st.

POCKET maps of Warren county on sale at AGE office.

Runs, Shipments and Stocks.

RUNS OR RECEIPTS.

PIPE LINE.	NOV., 1886.	OCT., 1886.
National Transit Co	1,497,382 64	1,596,431.00
Tidewater	190,360 20	191,669.16
Octave Oil Co	2,897.14	2 969.58
Excelsior Pipe Line	25 928.66	25,493.24
Pittsburgh Pipe Line	29,117.97	36 438 69
Southwest Pennsylvania	377,325.64	503,595.02
Total	2,123,012 25	2,356,596.69
Daily average	70,767.07	76,019.25

In the above runs only the oil received by the National Transit Co. directly from the wells, is included.

DELIVERIES OR SHIPMENTS.

PIPE LINE.	NOV., 1886	OCT., 1886.
National Transit Co	2,169,788.53	2,071,388.17
Tidewater	227,523 91	214,722.54
Octave Oil Co	2,788.06	2 418 17
Excelsior Pipe Line	23,120.24	7,667.31
Pittsburgh Pipe Line	27,852.12	42,838.51
Southwest Pennsylvania	206,683 99	324,644.32
Total	2,660,756 85	2 663,679.02
Less oil transferred between lines	2 3,188.38	289,072.77
Total	2,447,568 47	2,374,606.25
Daily average shipments	81,585.61	76,600,20

In the above shipments only the oil delivered to refiners is included.

Daily excess of shipments over runs, November	10,818.54
Daily excess of shipments over runs, October	580.75
Daily excess of runs over shipments, September	8,057 13
Daily excess of runs over shipments, August	11,931.56
Daily excess of runs over shipments, July	5,557.20
Daily excess of runs over shipments, June	4,793.41
Daily excess of runs over shipments, May	3,967.05
Daily excess of shipments over runs, April	4,899.20
Daily excess of shipments over runs, March	4,561 80
Daily excess of runs over shipments, February	14,701.52
Daily excess of shipments over runs, January, 1886	7,825.68

NET STOCKS.

PIPE LINE.	NOV. 30, 1886.	OCT. 31, 1886.
National Transit Co	30,997,274.20	31,455,767.48
Tidewater	1,368,198.05	1,357,607.24
Octave Oil Co	4,009 46	2,969 58
Excelsior Pipe Line	26,318.29	25,493 24
Pittsburgh Pipe Line	6,639.08	11,823.05
Southwest Pennsylvania	909,357.30	738,715.65
Total	33,305,846.38	33,592,372.24

Stocks decreased November	286, 26.86
Stocks decreased October	1,790.72
Stocks increased September	214,073.99
Stocks increased August	362,652 56
Stocks increased July	188,510 62
Stocks increased June	216,583.97
Stocks increased May	110,800.44
Stocks decreased April	165,635.61
Stocks decreased March	137,174 57
Stocks decreased February	436,146 69
Stocks decreased January, 1886	255,156 35

	RECEIPTS.	DELIVERIES.
Daily average November	70,767	81,585
Daily average October	76,019	76,600
Daily average September	77,989	69,932
Daily average August	76,880	64,949
Daily average July	74,880	69,323
Daily average June	75,811	71,017
Daily average May	68,602	64,635
Daily average April	64,228	69,127
Daily average March	61,558	63,120
Daily average February	56,464	71,165
Daily average January, 1886	56,418	64,244

NOTE—The above figures are in barrels of 42 gallons each, and include only the pipe lines of the New York and Pennsylvania oil regions.

Petroleum in Burmah and Egypt.

The petroleum wells near Ragoon, in British Burmah, have been considerably developed recently, the production for 1884 having been 404,000 gallons. The largest works in the Kyoukpyu district are owned by the Doronya Oil Company. Of the twenty-four wells there are nine in operation.

The report of Mr. Joseph M. Jones, the expert sent to examine the alleged petroleum field of Egypt, says in effect that it will be many a long day before a reliable supply of petroleum will be found at Suez. He says: From Jebel Zeit to the end of the Jebel Esh range there is a run of pretty uniform ground, say, forty miles long by five to twelve miles in width, all of which strata bears equally good indications of surface oil. While, however, the existence of surface oil is proved beyond a doubt, I would remark that that fact is one the value of which may be very easily exaggerated. The existence of surface oil may or may not be an indication of the existence of quantities of oil at a lower strata—the chances are about equal—but the quantity of surface oil is no indication as to the quantity of well oil. I feel convinced—and Mr. Mitchell (the Government geologist), together with others there, shares my conviction—that the surface oil in the place where struck is exhausted. M. Debay states that he has checked the supply. I venture to say that the supply has exhausted itself, and I base this opinion *inter alia* upon the simple fact that he is boring through the identical shaft where he found petroleum. I am further of opinion that the indications are sufficiently favorable to justify the preliminary expense of borings, but they will always be of a speculative character; and I would venture to suggest that they should be made in several places until a *bona fide* strata is reached, that they should then be plugged, and from the number of successful soundings made it will then be possible for the Government to judge as to the advisability of working, in which case, but not till then, reservoirs, means of transport, and refineries will become necessary. The diamond boring apparatus, in which I am personally interested, would, though expensive, in my opinion, place the question so rapidly beyond doubt that it would prove cheapest in the end. An expenditure of 6000*l.* to 10,000*l.* in six months would be necessary. It might be perfectly fruitless. It might indicate the source of enormous wealth. A lesser amount spread over a longer period might suffice with hand boring, but I feel convinced it would not be equally satisfactory

Vice-Consul Peacock, of Batoum, thinks the time will come when British capitalists may find it worth their while to look at Russian petroleum; but with kerosene (crude oil?) at less than a farthing for five gallons the time is not yet.

Statistical Charts of the Oil Regions.

Mr. John F. Carll, Assistant Geologist in the oil and gas regions, has prepared for the Annual Report of the Survey for 1886, two statistical charts, showing, both graphically and by tabulated figures, the growth and decline of the production of petroleum in the individual oil districts in the Pennsylvania and New York regions, from 1859 to January, 1886. These charts are as follows: Chart No. 1 of the Oil Regions of Pennsylvania and New York, showing the total annual production, the annual average price per barrel and the total annual value of crude oil at the wells from 1859 to 1886. Chart No. 2 of the Oil Regions of Pennsylvania and New York, showing the number of wells completed and the average daily production for each month, and the total production and shipments for each year from 1875 to 1886. In order to satisfy a demand for single copies of these charts in advance of the publication of the Annual Report for 1886, a small edition of each (500) has been placed on sale at the Survey Office; copies will be forwarded to applicants on receipt of 55 cents, to cover the cost of both charts and the postage thereon. Address Charles A. Ashburner, Geologist in Charge, 907 Walnut street, Philadelphia.

THE North Side Gas Company, of Pittsburgh, with a capital stock of $96,000, was chartered October 22. It is in Allegheny, and is a branch of the Chartiers. Mr. Calvin Wells is president of the new organization, and H. Sellers McKee and W. C. Schmertz are both largely interested. The wells of the new company are at Glenfield and Sewickley.

NATURAL gas from the wells of the Columbia Gas Light and Fuel Company, ten miles east of Franklin, was supplied to the city of Youngstown, Ohio, on December 2d.

Stocks Abroad.

Reports of stocks in London, Trieste, and the seven principal Continental ports, are summarized in the following statement:

STOCKS AFLOAT AND ASHORE	Nov. 27, 1886. Barrels.	Oct. 16, 1886. Barrels.
Seven Continental Ports	981,464	1,237,561
London	206,141	189,301
Trieste	------	------
Total Stocks afloat and ashore	1,187,605	1,426,862
Decrease in stocks since Oct. 16	239,257	

A detailed statistical table giving the stocks on hand, the stocks in vessels on the ocean, and the amount unloading from the vessels at the different ports, is appended, which shows at a glance the condition of affairs abroad and the increase or decrease as compared with the corresponding period of 1885. The shipments represent the amount of oil going to the interior of Europe from the seaports:

STOCKS IN FOREIGN PORTS NOVEMBER 27, 1886.

PORTS.	Stocks week ending Nov 27		Stocks afloat week ending Nov. 27.		Loading. Week ending Nov. 27.		Grand total stocks afloat and loading.		Receipts From July 1.		Shipments from July 1.	
	1885. Barrels.	1886. Barrels.	1885. Barrels	1886. Barrels.	1885. Barrels.	1886. Barrels	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.	1885. Barrels.	1886. Barrels.
London	98,001	82,033	93,869	75,608	75,500	48,500	267,370	206,141	248,739	193,448	258,308	280,657
Trieste	13,913	------	------	------	------	------	13,913	------	------	------	------	------
Bremen	828,518	114,499	73,655	35,978	14,000	62,600	416,173	218,077	232,871	236,228	352,423	333,105
Hamburg	56,403	38,281	94,450	98,373	------	59,700	150,853	196,354	495,439	455,512	619,878	571,896
Antwerp	15,876	136,902	111,482	43,013	59,000	56,200	186,358	236,115	326,697	404,482	417,781	428,281
Rotterdam	21,093	65,043	35 219	38,458	20,000	36,500	76,312	140,001	184,692	282,429	232,536	299,325
Amsterdam	8,526	19,519	31,361	28,547	21,500	13,500	61,387	61,566	88,580	100,252	107.425	148,211
Stettin	55,866	65,0 2	8,860	16 743	3,500	------	68,226	81,805	213,102	257,930	215,648	208,661
Danzig	20,240	21,752	3,905	24,794	------	6,000	24,145	52 546	45,223	34,614	39,352	40,309
Total	506,522	461,058	358,932	285,906	118,000	234,500	983,454	981,464	1,586,604	1,771,447	1,985,043	2,029,788

	1883.	1884.	1885.	1886.
Total stocks Continental Ports	1,520,175	1,036,054	506,522	461,058
Total afloat, " "	114,268	275,531	358,932	285,906
Total loading	133,000	113,300	118,000	234,500
Total	1,767,443	1,424,885	983,454	981,464
Afloat and loading for direct Continental Ports	3,600	10,000	--------	--------
" " " Baltic Sea, exclusive Stettin and Danzig	------	13,000	3,900	--------
" " " Total Continental Ports	1,771,043	1,447,885	987,354	981,464
" " " Total London	491,689	208,090	267,370	206,141
" " " English harbors, exclusive London	112,900	130,300	6,200	92,000
Grand total	2,375,632	1,786,275	1,260,924	1,279,605

OFFICIAL STATEMENT—EXPORTS OF PETROLEUM, OCTOBER, 1886.

BY WM. F. SWITZLER, CHIEF OF BUREAU OF STATISTICS, WASHINGTON, D. C., NOVEMBER 10, 1886.

CUSTOMS DISTRICTS	MINER'L, CRUDE		NAPHTHAS		ILLUMINATING.		LUBRICATING & PARAFINE OILS		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars	Gallons.	Dollars.
Boston and Charlestown, Mass	------	------	300	75	1,038,367	84,002	24,238	5,306	------	------	1,062,905	89,383
New York, N. Y	3 871,224	221,156	1,694,326	153,640	28,276,123	2,087,889	1,038,564	189 524	106,050	5,702	34,486,287	2,657,911
Philadelphia, a	2,972,3 5	179.299	578,731	47,4 8	11,158,320	836,330	40,875	5,232	152,460	8,040	14,902,691	1,076,319
Baltimore, Md	------	------	------	------	802,905	67,658	800	140	------	------	803,705	67,798
Total for Oct., 1886	6,343,529	400,455	2 273,357	201,133	41,275,715	3,075,879	1,104,477	200,202	258,510	13,742	51,255,588	3,891,411
Total for Oct., 1885	8,504,142	651,428	2,210,812	169,551	37,697,540	3,417,687	1,124,642	226,658	393,960	25,730	49,931,096	4,491,054
Total for 10 months ending Oct 31. 18 6	60,927,635	4,073,281	11,229,870	986,453	399,228,447	32,136,680	11,117,618	2,132,005	1,988,986	109,205	484,492,556	39,437,624
Total for 10 months ending Oct.31, 1885	69,319,751	5,130,130	13,254,327	1,018,672	386,653,531	33,020,527	10,668,665	2 145,034	5,121,060	299,539	485,017,334	41,613,902

CRUDE QUOTATIONS FOR NOVEMBER, 1886.

Day of Month and week.	BRADFORD.				OIL CITY.				NEW YORK.				PITTSBURGH.			
	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed	Opened	Highest	Lowest	Closed
M 1	66¼	66¼	65¾	65¾	66⅜	66⅜	65⅝	65¾	66½	66½	65⅝	65¾	66⅜	66½	65⅝	65¾
T 2	65⅞	65⅞	65¾	65¾	65⅞	66	65⅝	65¾					65⅞	66	65¾	65⅝
W 3	66	66	65¾	65⅞	66	66⅛	65⅝	65⅞	66	66⅛	65½	66	66	66	65¾	66
T 4	66	66⅜	66	66⅛	66	66⅜	66	66¼	66⅛	66½	66	66⅜	66	66⅝	66	66¼
F 5	66¼	66¼	65⅝	65⅝	66¼	66⅜	65⅝	65⅞	66⅛	66⅜	65⅝	65¾	66⅛	66⅛	65⅝	65¾
S 6	65¾	65¾	65½	65⅝	65⅞	65⅞	65½	65⅝	65¾	65⅞	65½	65⅝	65½	65⅞	65½	65⅝
M 8	65¾	65⅞	65¾	65¾	65¾	65⅞	65⅝	65¾	65¾	66	65⅝	65¾	65¾	66	65⅝	65¾
T 9	65⅞	66	65⅞	65⅞	65⅞	66⅛	65¾	65⅞	65⅞	66	65¾	66	65⅞	66	65⅞	66
W 10	65⅞	66½	65½	66⅜	65¾	66½	65½	66⅜	65⅞	66⅝	65⅝	66⅝	65¾	66½	65⅝	66½
T 11	66½	68½	66⅜	68	66¼	68⅜	66¼	68	66¾	68½	66⅜	6 ⅞	66½	68½	66⅜	67⅞
F 12	68⅛	72⅜	68⅛	71¼	68¼	72⅜	68¼	71¼	68¼	72½	68⅛	7 ⅜	68¼	72½	68⅛	71⅜
S 13	71¾	74⅜	71½	74⅜	71½	74½	71⅜	74⅜	71½	74⅜	71⅜	74¼	71½	74⅜	71¼	74⅜
M 15	74¾	77	74¼	74¾	75	77	74⅛	74¾	75	77⅛	74¼	74⅝	75	77⅜	74¼	74¾
T 16	74¾	76⅛	73⅛	75⅞	74⅝	76¼	73	75⅞	64⅝	76⅛	73	76⅛	74½	76⅛	73	75¾
W 17	76⅞	77¼	75⅜	75½	76¾	77¼	75½	75½	76⅞	77⅜	75½	75⅝	76¾	77⅜	75½	75⅝
T 18	75½	75⅝	74¾	75	75¾	75¾	74⅝	75	75⅛	75¾	74⅝	74⅞	75½	75⅝	74½	75
F 19	75⅛	75½	75	75¼	75⅛	75¾	74⅞	75	75	75¾	74⅝	75⅛	74⅞	75¾	74⅞	75⅛
S 20	75¾	75¾	74⅜	74½	75⅜	75⅝	74⅝	74⅝	75½	75⅝	74⅜	74½	75½	75⅝	74½	74½
M 22	74⅝	77¾	74	77¾	74⅛	78	74	78	74⅜	77⅞	74	77⅞	74⅛	77¾	74	77¾
T 23	78⅜	79	77¼	77¼	78	79	77⅛	77⅜	78	79	77⅛	77¼	78⅞	79	77⅛	77⅜
W 24	76¾	77⅝	76⅜	76⅝	77⅛	77¾	76¼	76¼	76⅝	77⅞	76⅜	76⅜	76⅞	77¾	76⅛	76⅛
T 25																
F 26	77	78⅜	77	77⅞	77½	78⅜	77⅛	77¾	77¼	78½	77⅛	77¾	77⅜	78½	77¼	77⅜
S 27	78¼	78½	77½	78	78¼	78½	77½	77⅞	78¼	78½	77½	77⅞	78¼	78½	77⅛	77⅞
M 29	78⅛	78⅜	77¼	77⅝	78⅜	78½	77¼	77⅝	78¼	78½	77⅜	77⅞	78⅜	78½	77⅜	77⅝
T 30	77⅞	79¾	77⅜	78⅜	78	80	77⅛	78½	78	79⅞	77½	78¼	77⅞	80	77⅜	78⅜